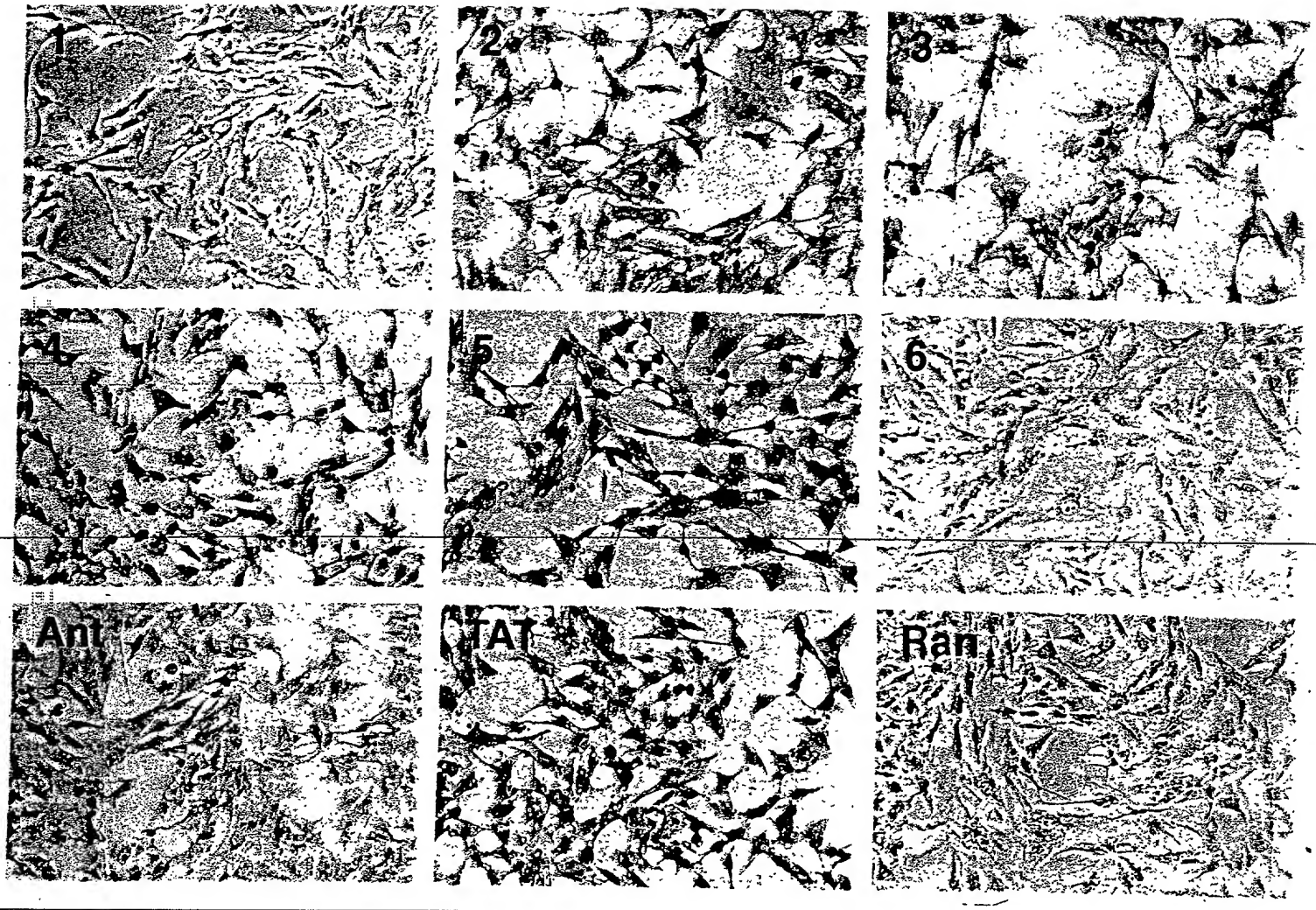


Figure 1A

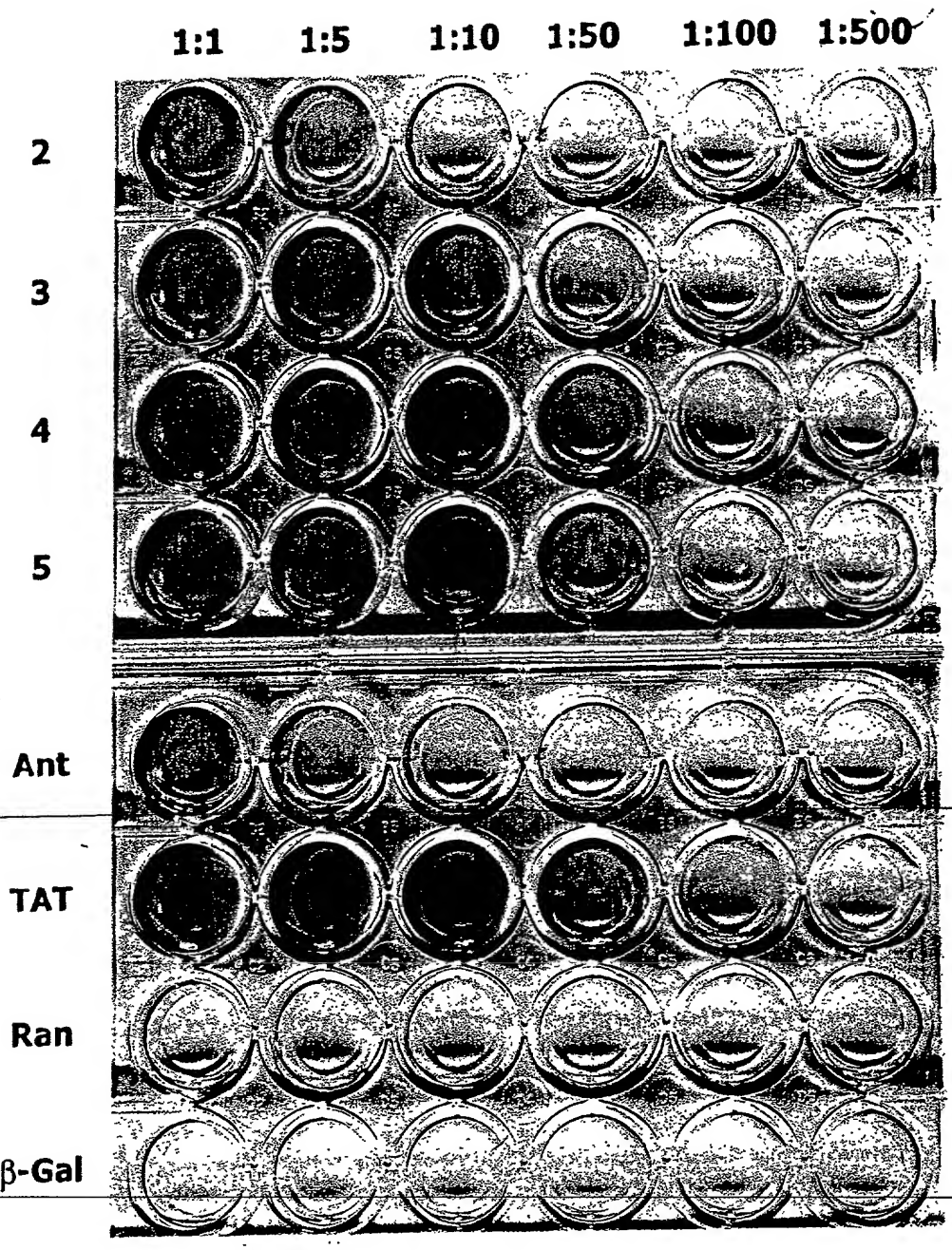


Figure 1B

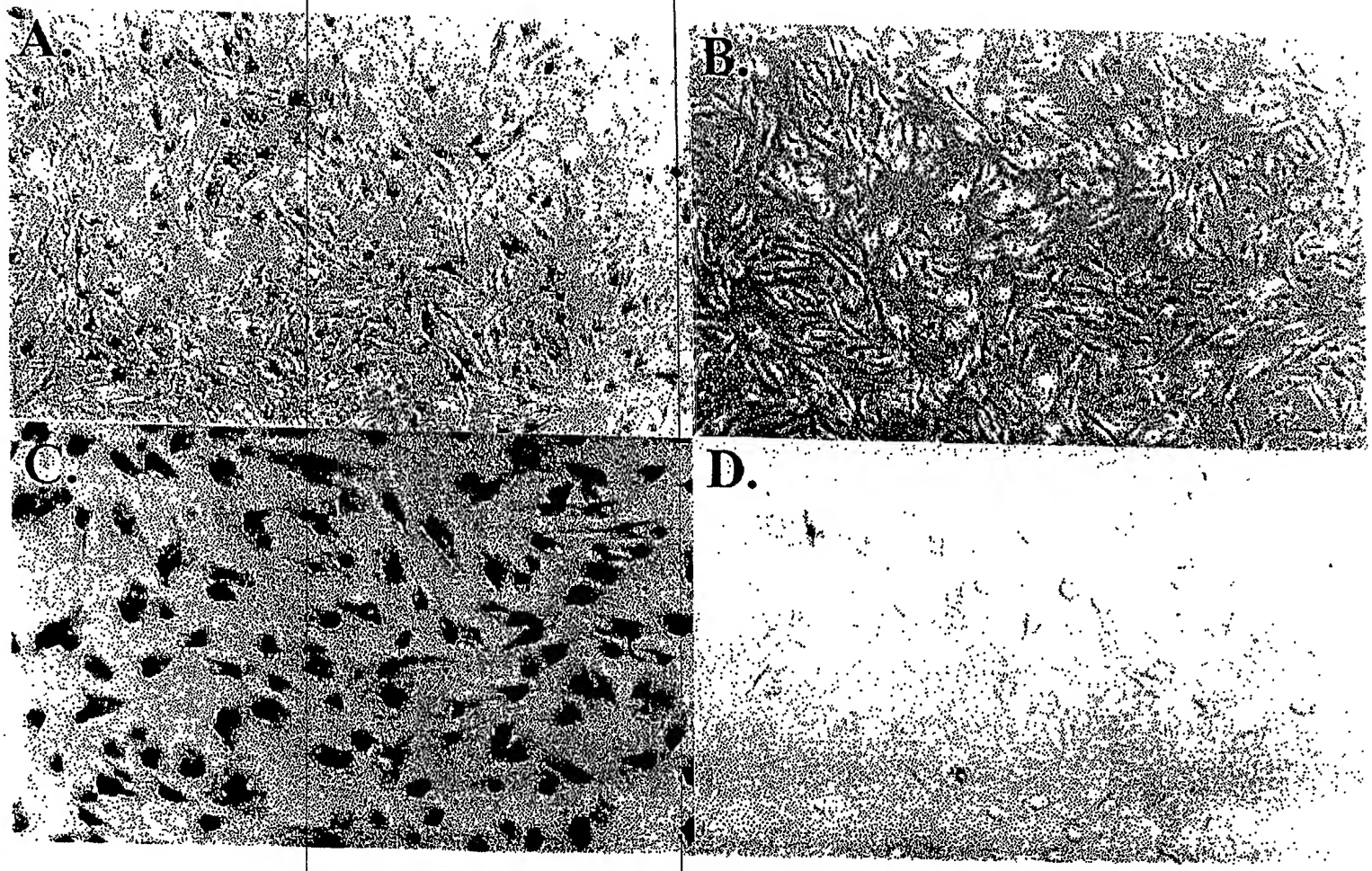


Figure 2

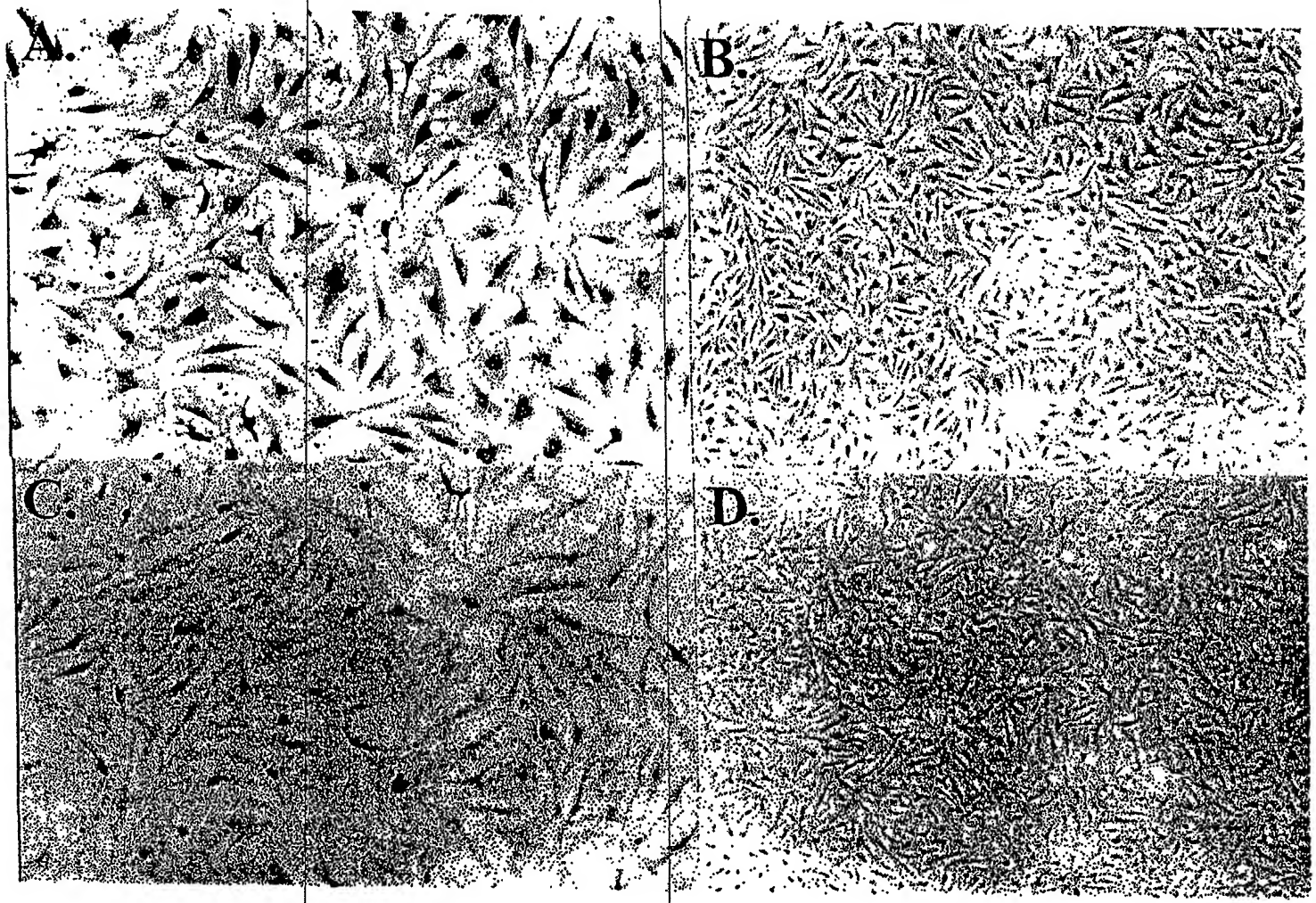


Figure 3

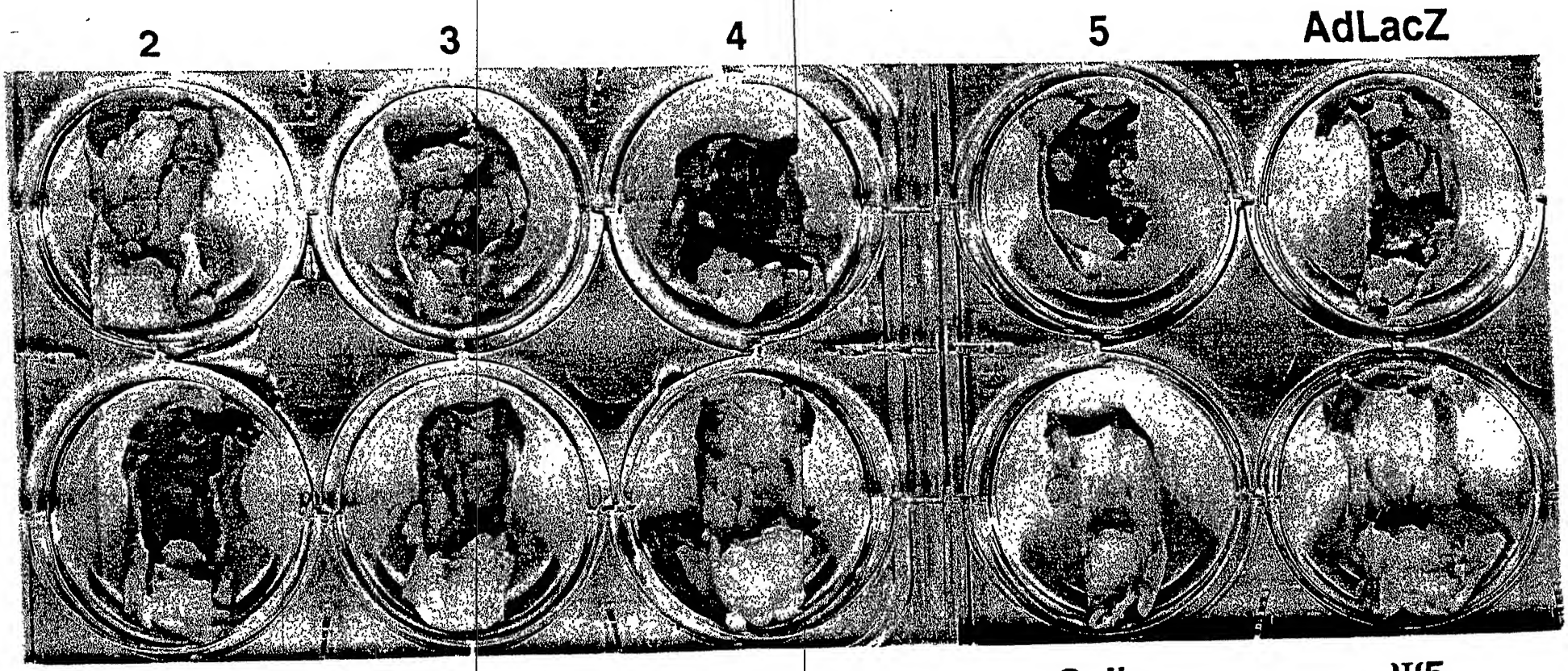


Figure 4A

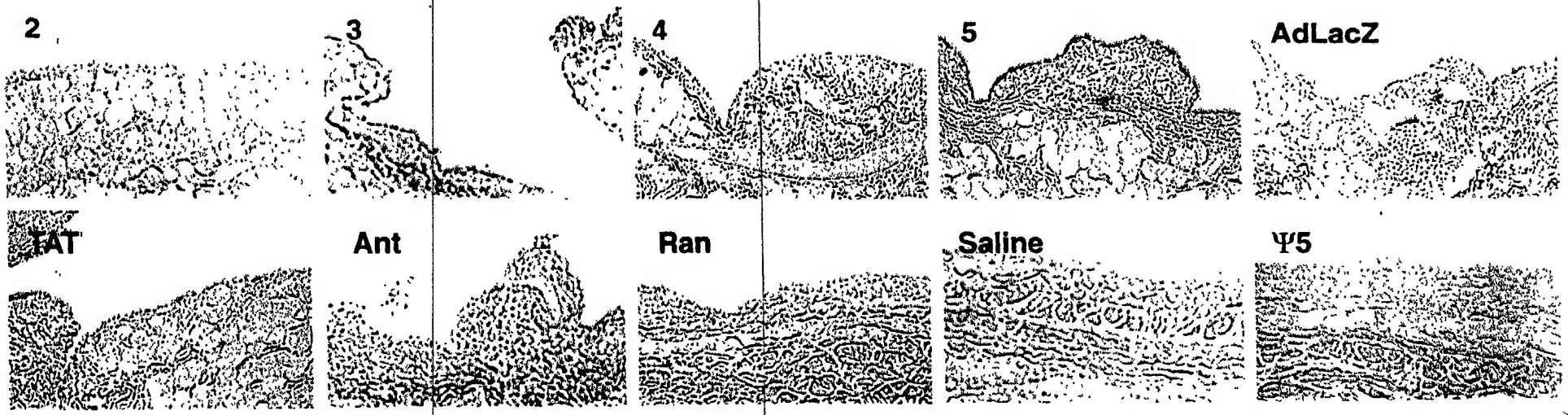


Figure 4B

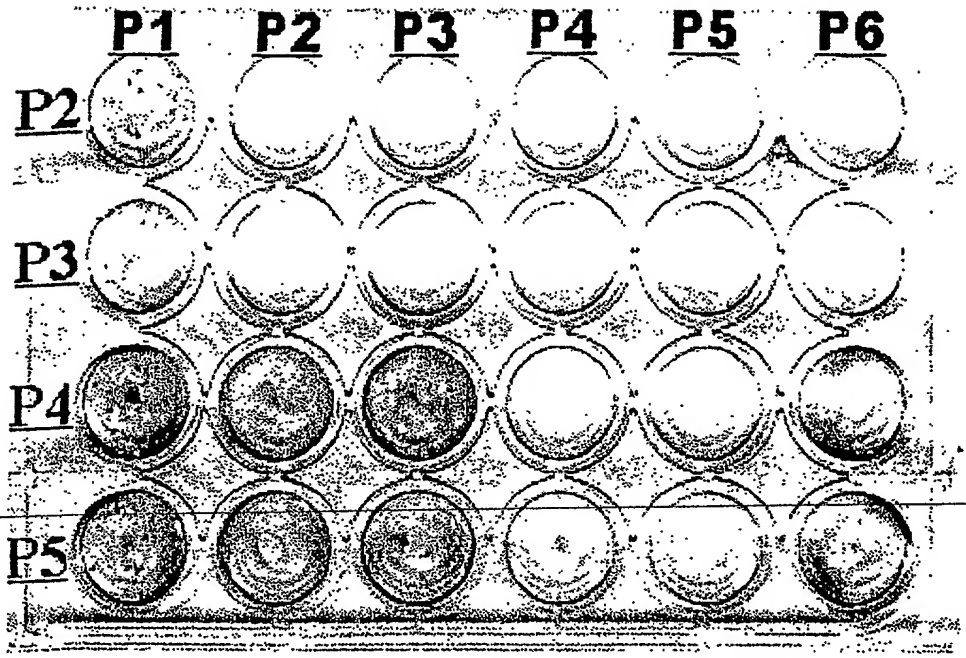


Figure 5

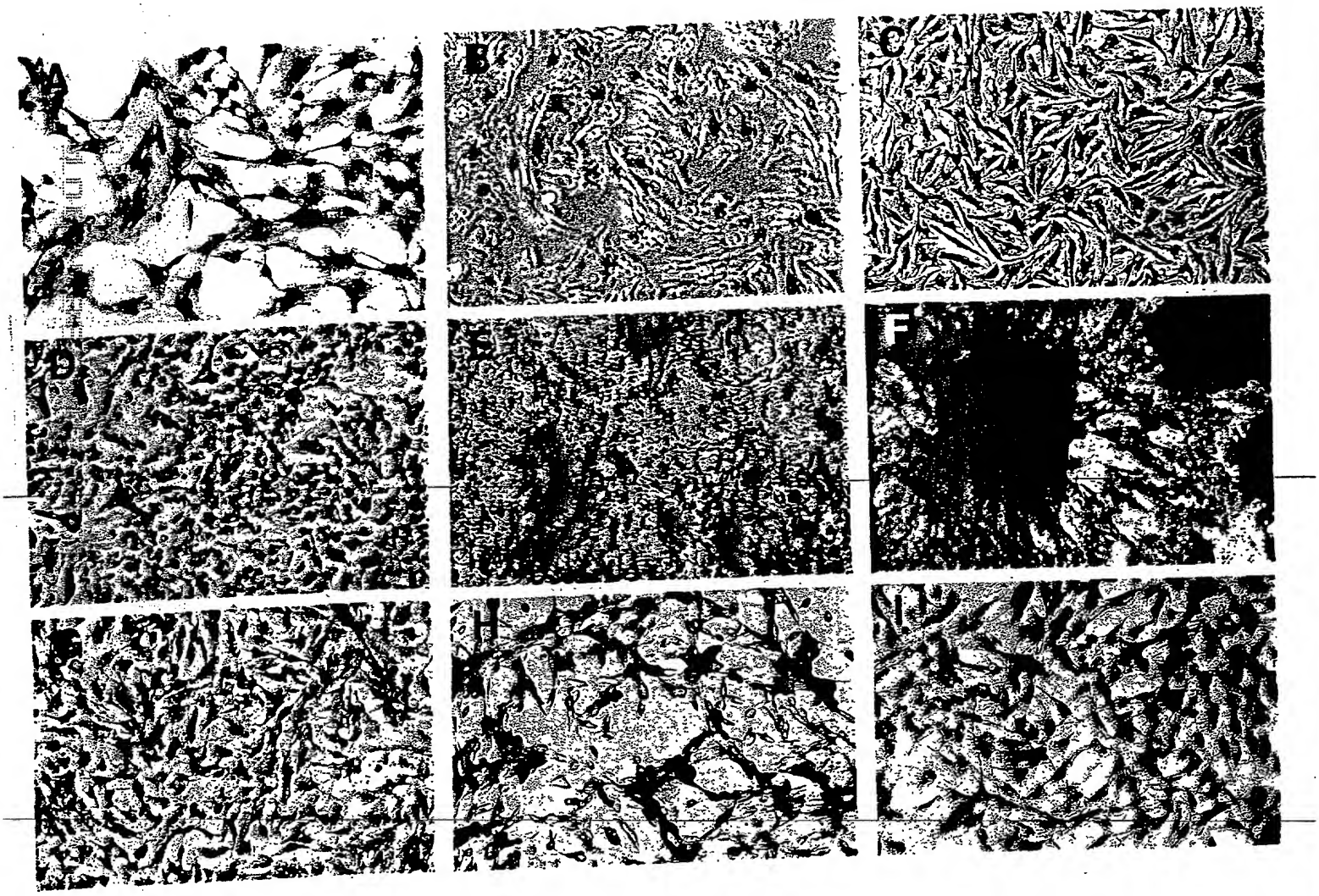


Figure 6

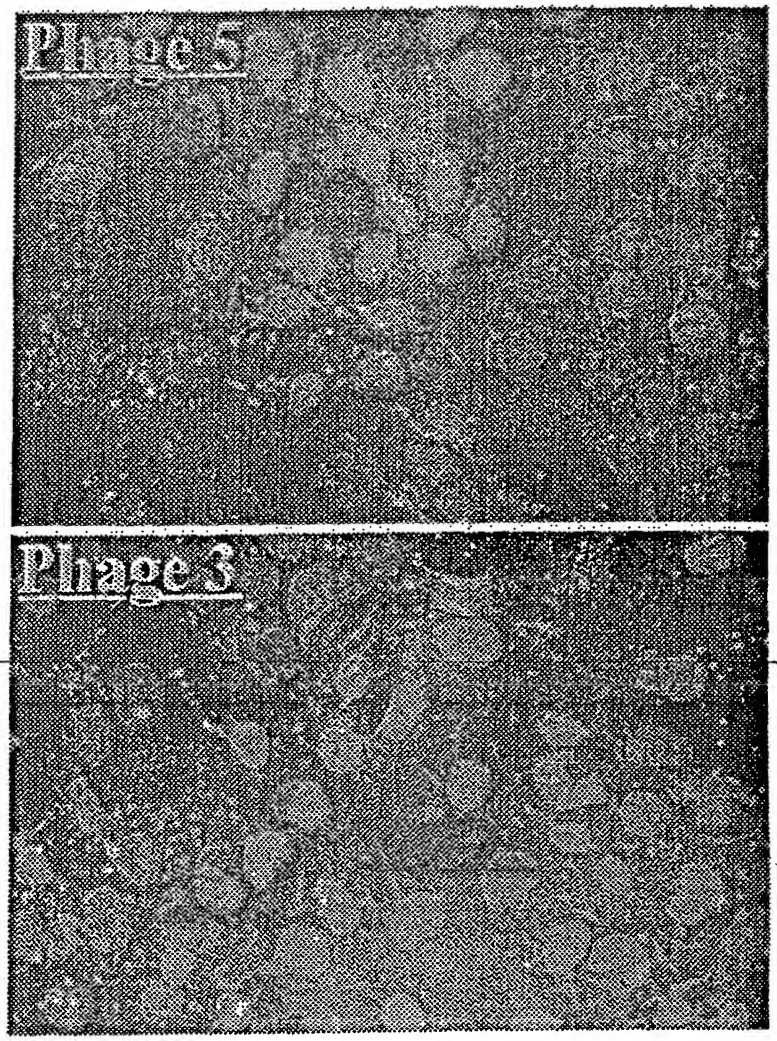


Figure 7

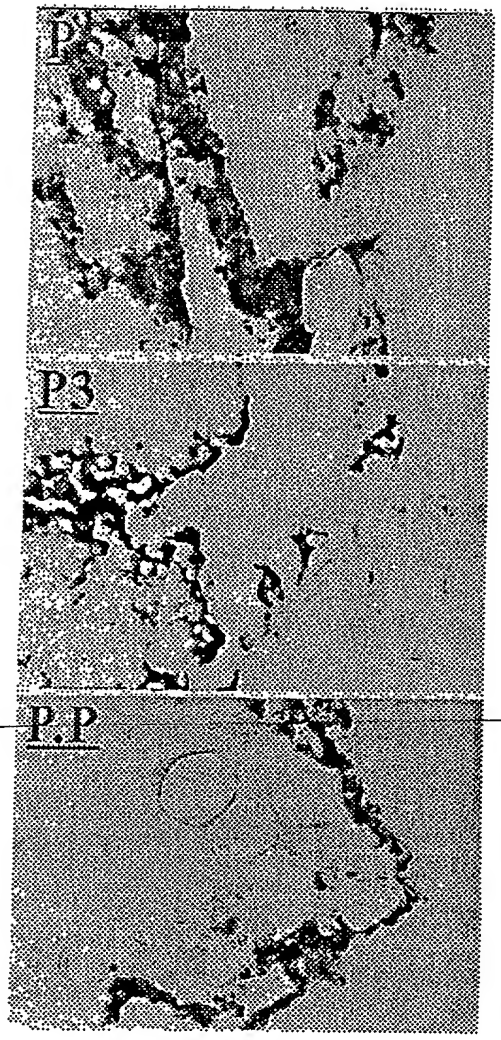


Figure 8

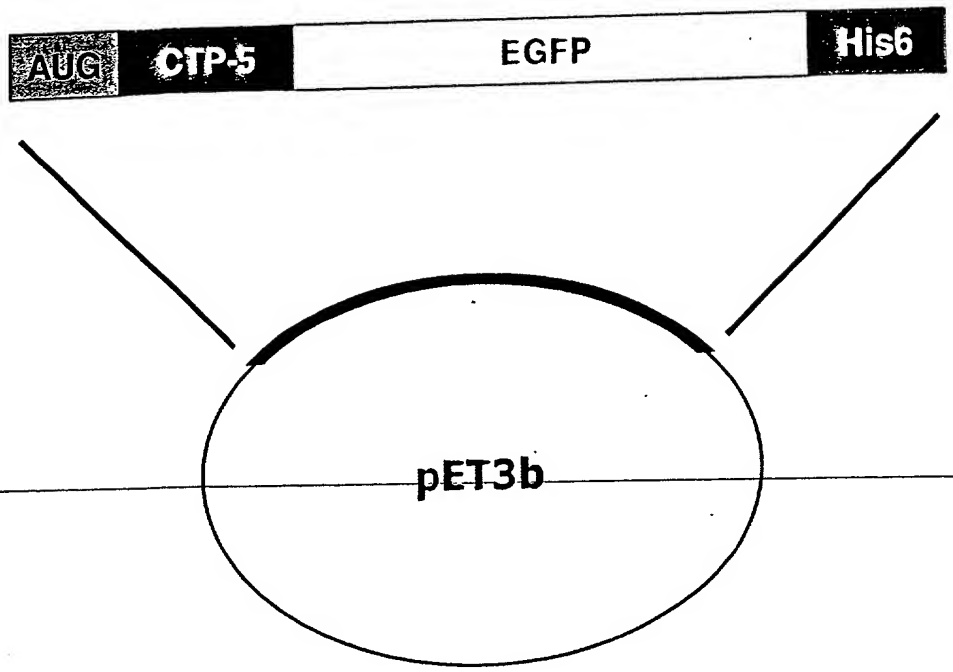


Figure 9A

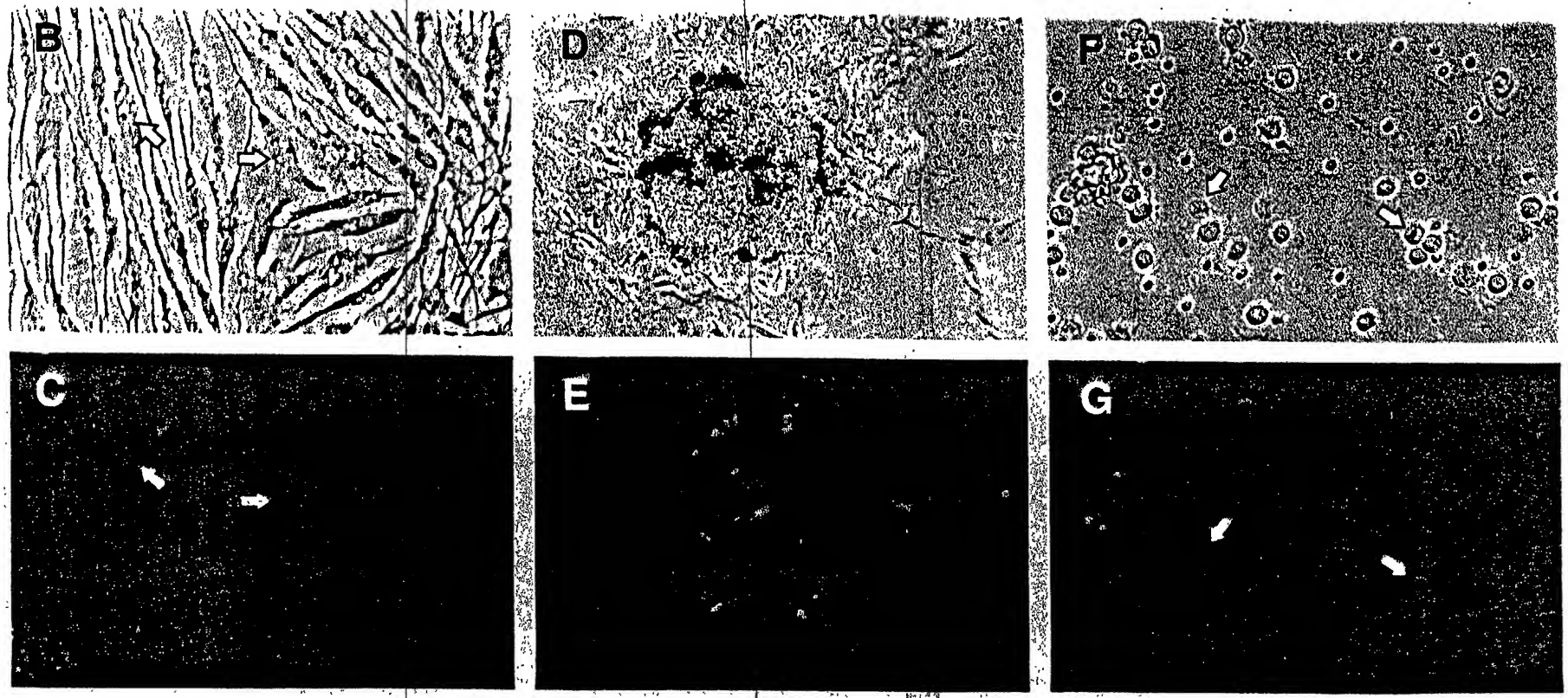


Figure 9B-G

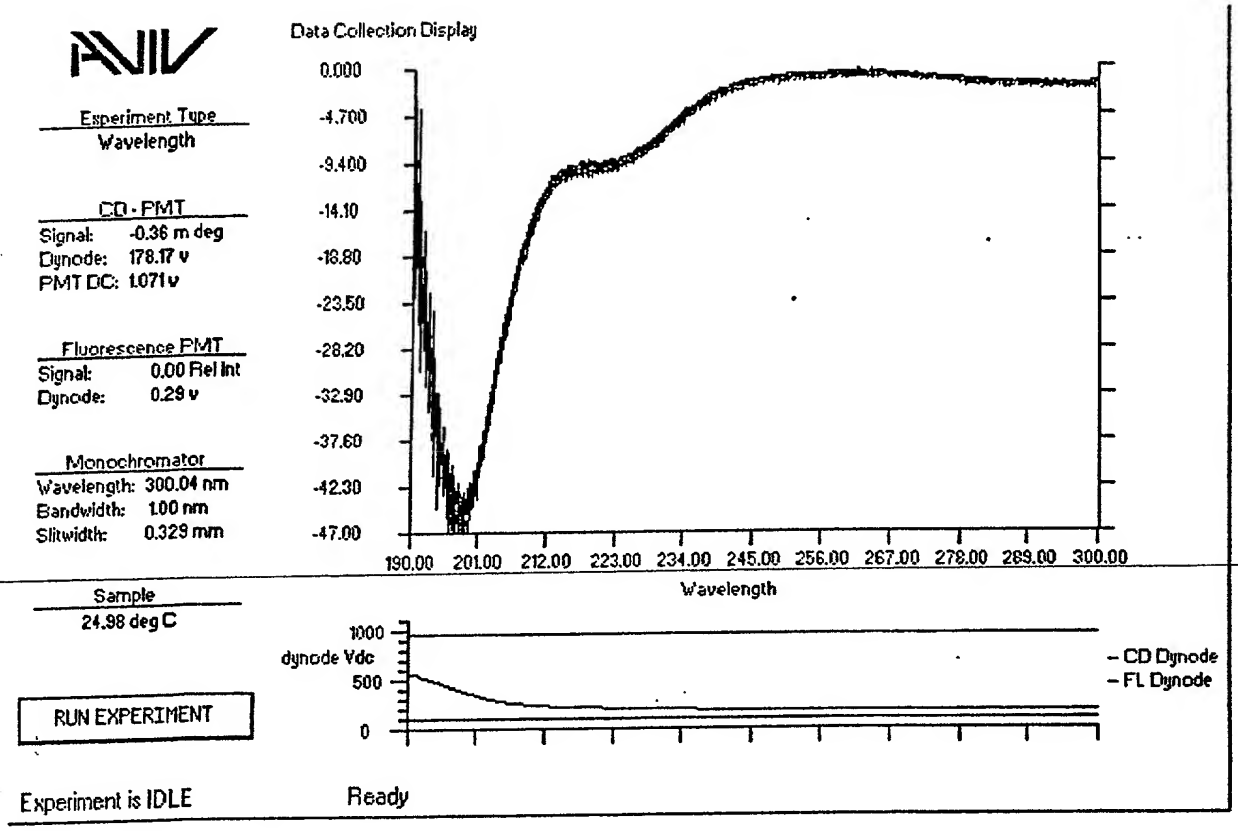

AVIV
Data Collection Display
Esperiment Type
Wavelength
CD - PMT
Signal: -0.36 m deg
Dynode: 178.17 v
PMT DC: 1.071 v
Fluorescence PMT
Signal: 0.00 Rel Int
Dynode: 0.29 v
Monochromator
Wavelength: 300.04 nm
Bandwidth: 1.00 nm
Slitwidth: 0.329 mm
Sample
24.98 deg C
RUN EXPERIMENT
0.000
-4.700
-9.400
-14.10
-18.80
-23.50
-28.20
-32.90
-37.60
-42.30
-47.00
190.00 201.00 212.00 223.00 234.00 245.00 256.00 267.00 278.00 289.00 300.00
Wavelength
1000
dynode Vdc
500
0
CD Dynode
FL Dynode
Experiment is IDLE
Ready

Figure 10 A

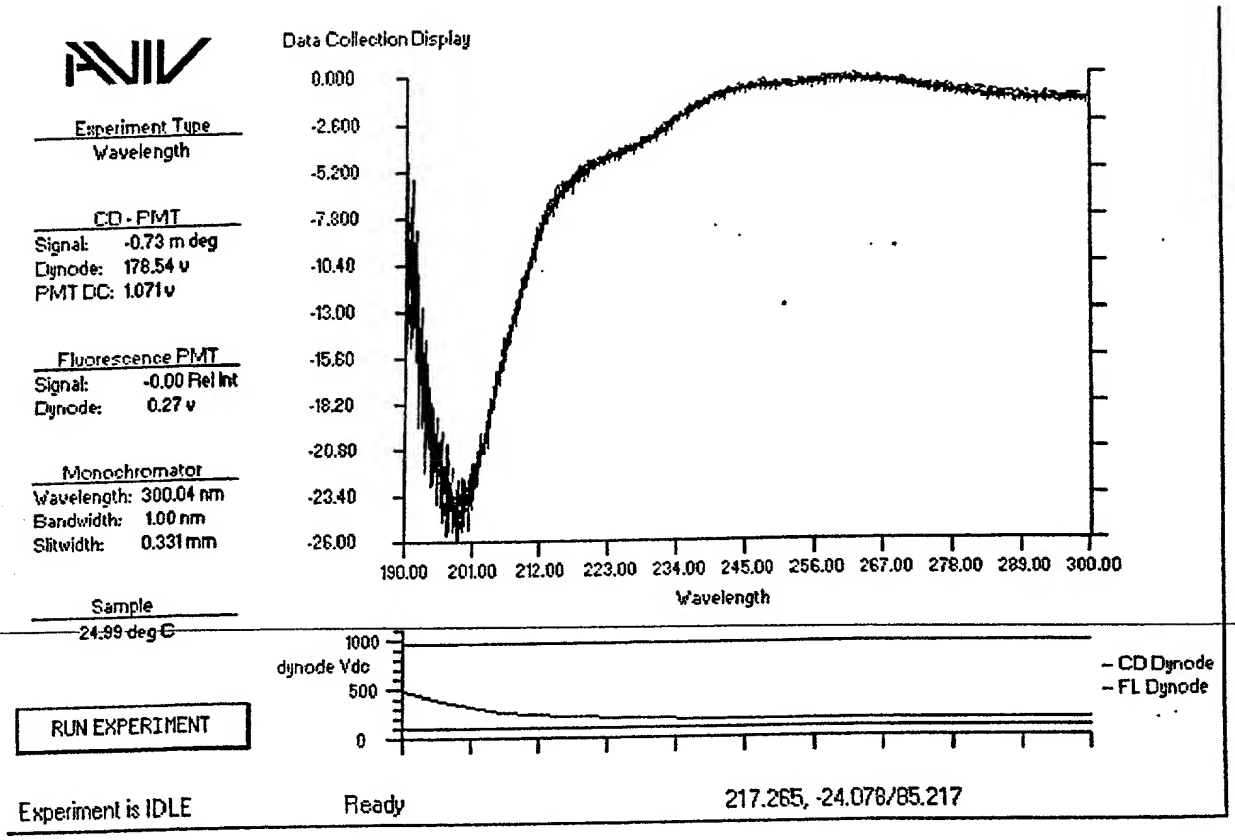

Data Collection Display
Experiment Type
Wavelength
CD - PMT
Signal: -0.73 m deg
Dynode: 178.54 v
PMT DC: 1.071 v
Fluorescence PMT
Signal: -0.00 Rel Int
Dynode: 0.27 v
Monochromator
Wavelength: 300.04 nm
Bandwidth: 1.00 nm
Slitwidth: 0.331 mm
Sample
24.99 deg C
RUN EXPERIMENT
0.000
-2.600
-5.200
-7.800
-10.40
-13.00
-15.60
-18.20
-20.80
-23.40
-26.00
190.00 201.00 212.00 223.00 234.00 245.00 256.00 267.00 278.00 289.00 300.00
Wavelength
1000
dynode Vdc
500
0
CD Dynode
FL Dynode
Experiment is IDLE
Ready
217.265, -24.078/85.217

Figure 10 B

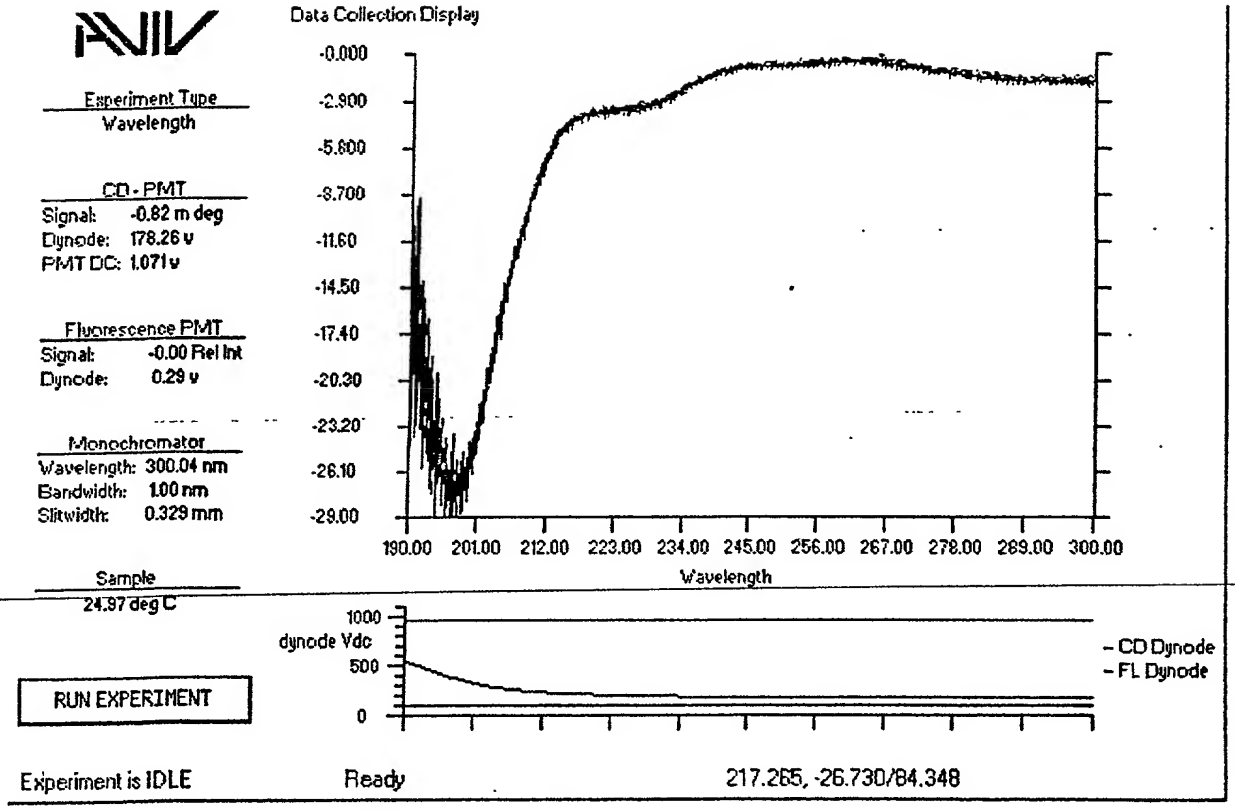

Data Collection Display
Experiment Type
Wavelength
CD - PMT
Signal: -0.82 m deg
Dynode: 178.26 v
PMT DC: 1.071 v
Fluorescence PMT
Signal: -0.00 Rel Int
Dynode: 0.29 v
Monochromator
Wavelength: 300.04 nm
Bandwidth: 1.00 nm
Slitwidth: 0.329 mm
Sample
24.97 deg C
RUN EXPERIMENT
-0.000
-2.900
-5.800
-8.700
-11.60
-14.50
-17.40
-20.30
-23.20
-26.10
-29.00
190.00 201.00 212.00 223.00 234.00 245.00 256.00 267.00 278.00 289.00 300.00
Wavelength
1000
dynode Vdc
500
0
CD Dynode
FL Dynode
Experiment is IDLE
Ready
217.265, -26.730/84.348

Figure 10 C

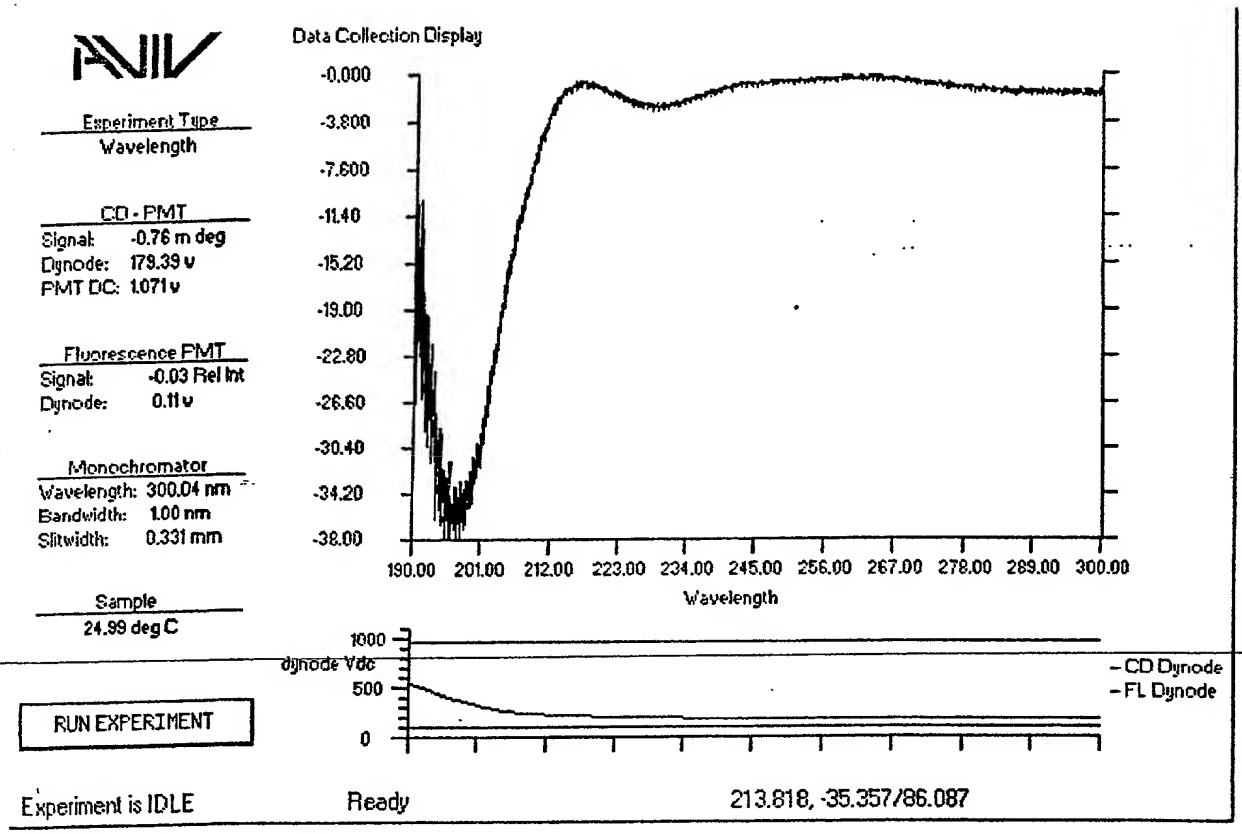

Data Collection Display
Experiment Type
Wavelength
CD - PMT
Signal: -0.76 m deg
Dynode: 179.39 v
PMT DC: 1.071 v
Fluorescence PMT
Signal: -0.03 Rel Int
Dynode: 0.11 v
Monochromator
Wavelength: 300.04 nm
Bandwidth: 1.00 nm
Slitwidth: 0.331 mm
Sample
24.99 deg C
RUN EXPERIMENT
-0.000
-3.800
-7.600
-11.40
-15.20
-19.00
-22.80
-26.60
-30.40
-34.20
-38.00
190.00 201.00 212.00 223.00 234.00 245.00 256.00 267.00 278.00 289.00 300.00
Wavelength
1000
dynode Vdc
500
0
CD Dynode
FL Dynode
Experiment is IDLE
Ready
213.818, -35.357/86.087

Figure 10 D

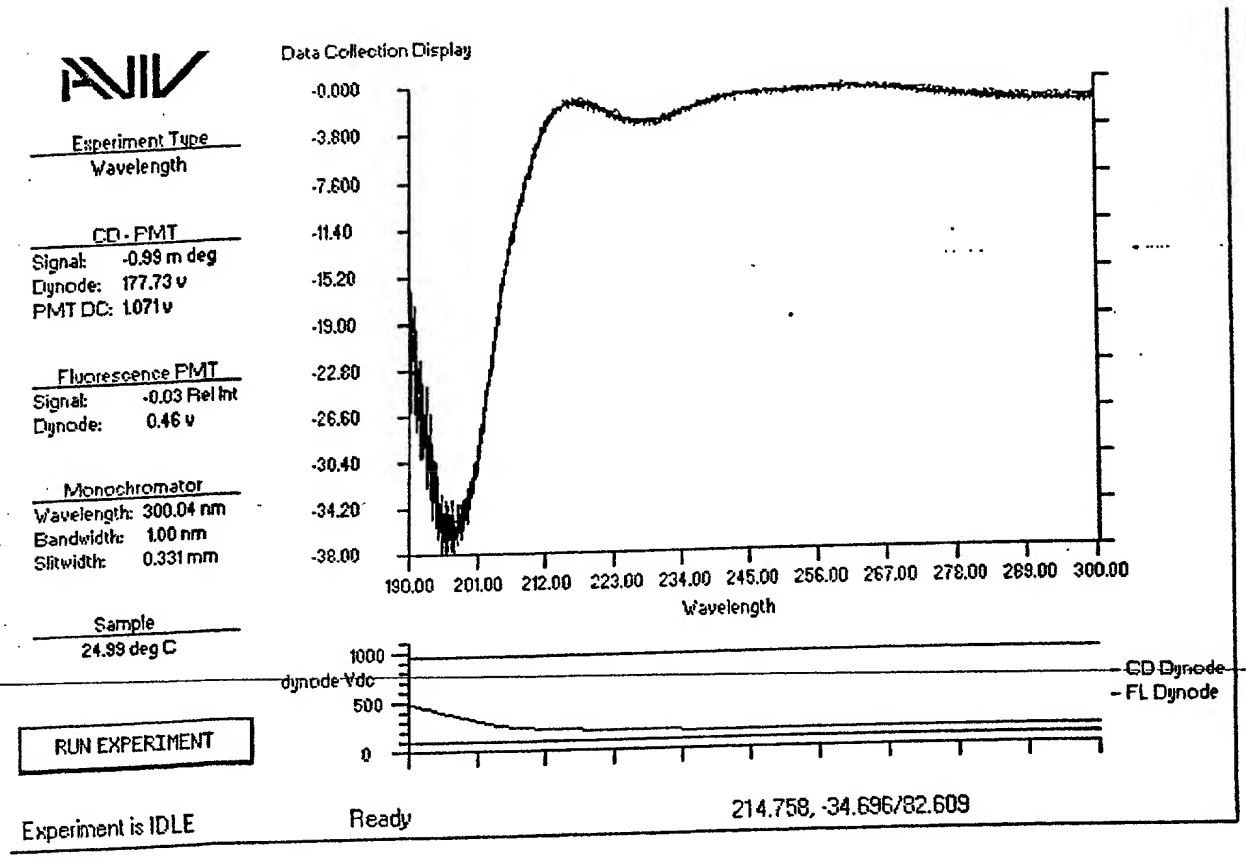

Data Collection Display
Experiment Type
Wavelength
CD - PMT
Signal: -0.99 m deg
Dynode: 177.73 v
PMT DC: 1.071 v
Fluorescence PMT
Signal: -0.03 Rel Int
Dynode: 0.46 v
Monochromator
Wavelength: 300.04 nm
Bandwidth: 1.00 nm
Slitwidth: 0.331 mm
Sample
24.99 deg C
RUN EXPERIMENT
-0.000
-3.800
-7.600
-11.40
-15.20
-19.00
-22.80
-26.60
-30.40
-34.20
-38.00
190.00 201.00 212.00 223.00 234.00 245.00 256.00 267.00 278.00 289.00 300.00
Wavelength
1000
dynode Vdc
500
0
CD Dynode
FL Dynode
Experiment is IDLE
Ready
214.758, -34.696/82.609

Figure 10 E

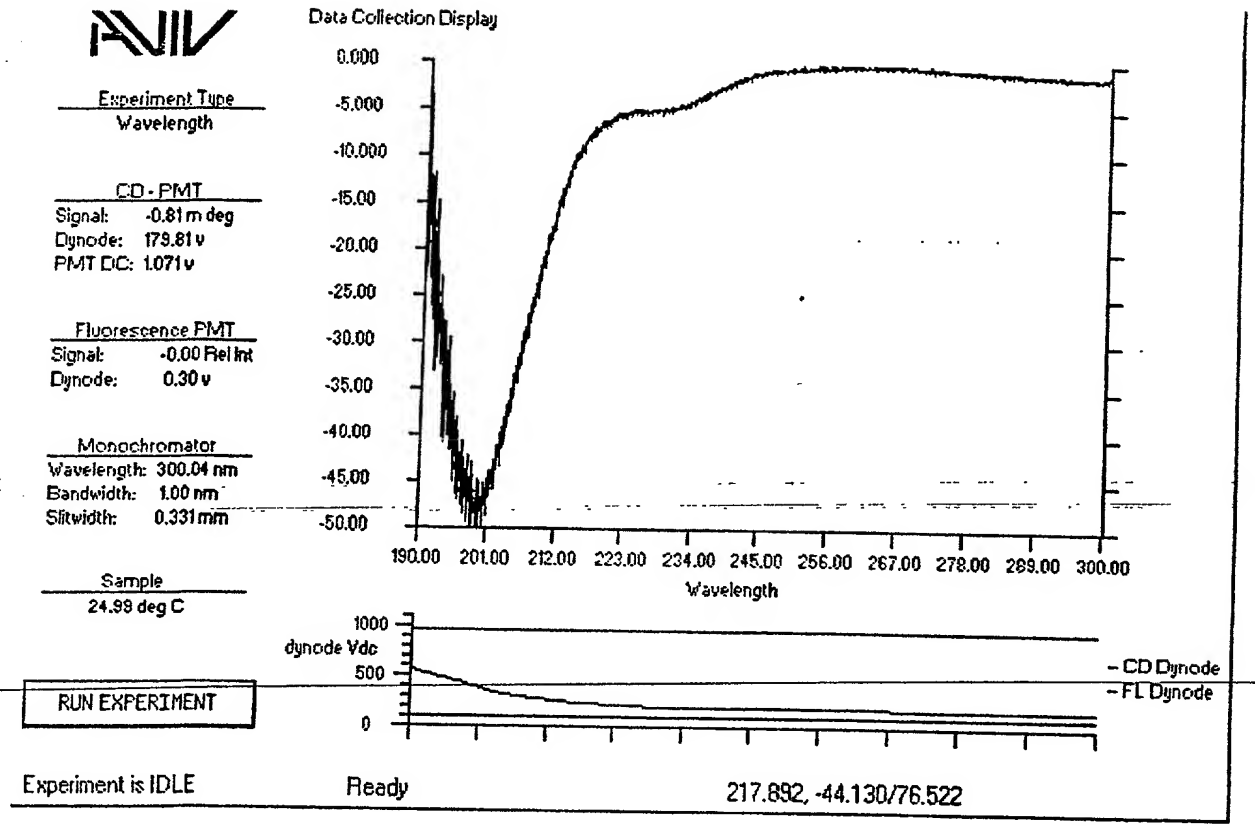

AVIV
Data Collection Display
Experiment Type
Wavelength
CD - PMT
Signal: -0.81 m deg
Dynode: 179.81 v
PMT DC: 1.071 v
Fluorescence PMT
Signal: -0.00 Rel Int
Dynode: 0.30 v
Monochromator
Wavelength: 300.04 nm
Bandwidth: 1.00 nm
Slitwidth: 0.331 mm
Sample
24.99 deg C
RUN EXPERIMENT
0.000
-5.000
-10.000
-15.00
-20.00
-25.00
-30.00
-35.00
-40.00
-45.00
-50.00
190.00 201.00 212.00 223.00 234.00 245.00 256.00 267.00 278.00 289.00 300.00
Wavelength
1000
dynode Vdc
500
0
CD Dynode
FL Dynode
Experiment is IDLE
Ready
217.892, -44.130/76.522

Figure 10 F

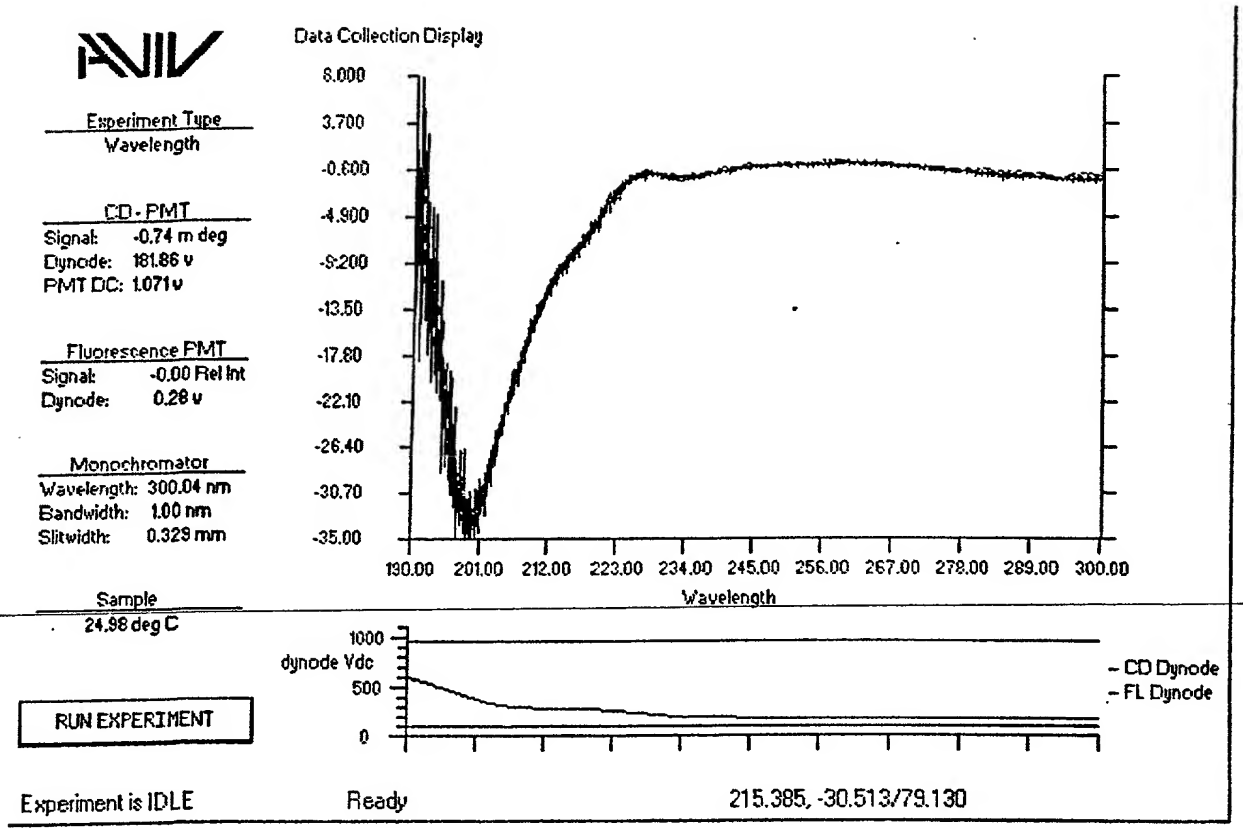

Data Collection Display
Experiment Type
Wavelength
CD - PMT
Signal: -0.74 m deg
Dynode: 181.86 v
PMT DC: 1.071 v
Fluorescence PMT
Signal: -0.00 Rel Int
Dynode: 0.28 v
Monochromator
Wavelength: 300.04 nm
Bandwidth: 1.00 nm
Slitwidth: 0.329 mm
Sample
24.98 deg C
RUN EXPERIMENT
8.000
3.700
-0.600
-4.900
-9.200
-13.50
-17.80
-22.10
-26.40
-30.70
-35.00
190.00 201.00 212.00 223.00 234.00 245.00 256.00 267.00 278.00 289.00 300.00
Wavelength
1000
dynode Vdc
500
0
CD Dynode
FL Dynode
Experiment is IDLE
Ready
215.385, -30.513/79.130

Figure 10 G

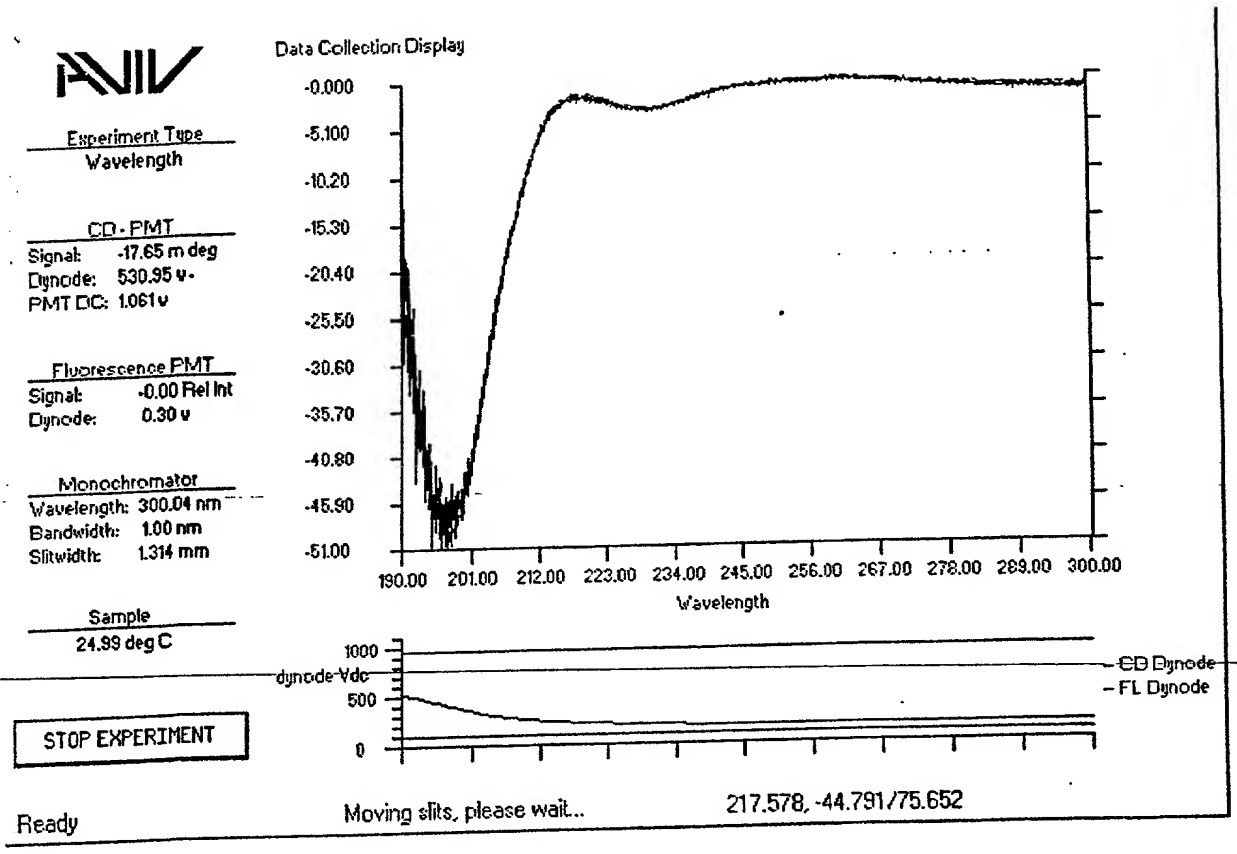

Data Collection Display
Experiment Type
Wavelength
CD - PMT
Signal: -17.65 m deg
Dynode: 530.95 v
PMT DC: 1.061 v
Fluorescence PMT
Signal: -0.00 Rel Int
Dynode: 0.30 v
Monochromator
Wavelength: 300.04 nm
Bandwidth: 1.00 nm
Slitwidth: 1.314 mm
Sample
24.99 deg C
STOP EXPERIMENT
-0.000
-5.100
-10.20
-15.30
-20.40
-25.50
-30.60
-35.70
-40.80
-45.90
-51.00
190.00 201.00 212.00 223.00 234.00 245.00 256.00 267.00 278.00 289.00 300.00
Wavelength
1000
dynode Vdc
500
0
CD Dynode
FL Dynode
Ready
Moving slits, please wait...
217.578, -44.791/75.652

Figure 10 H

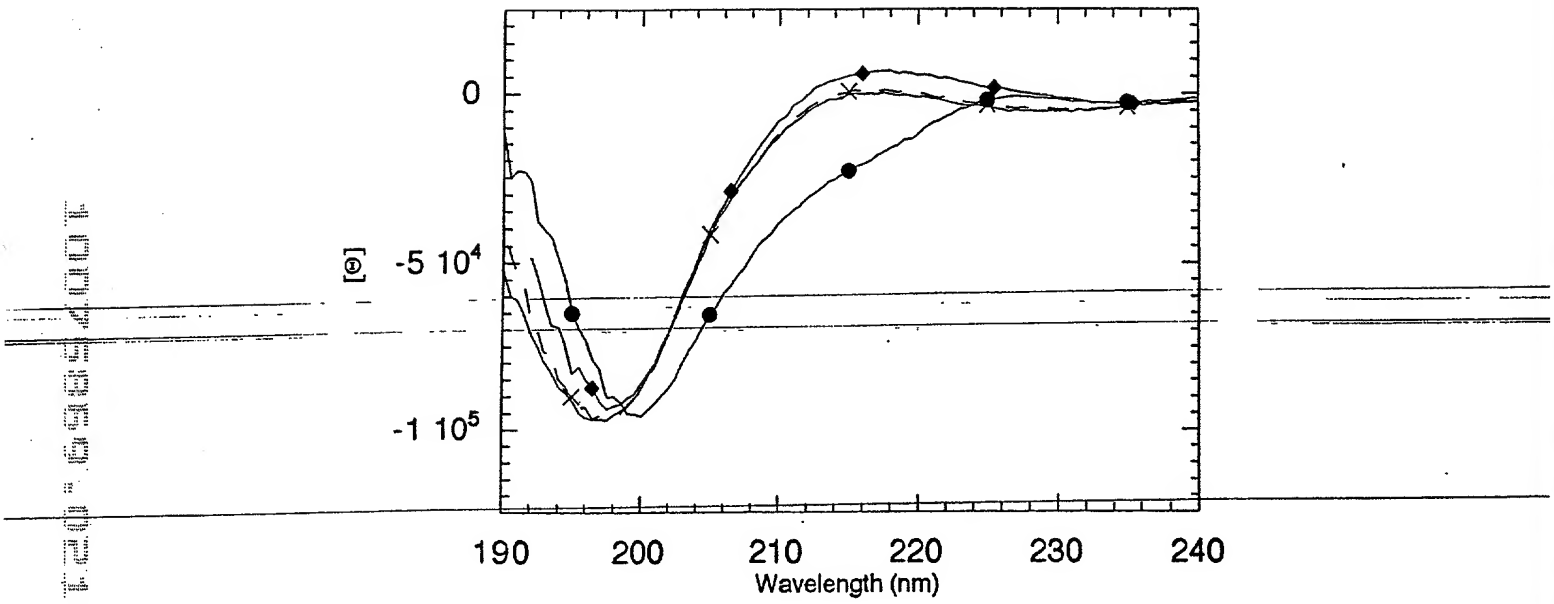


Figure 11A

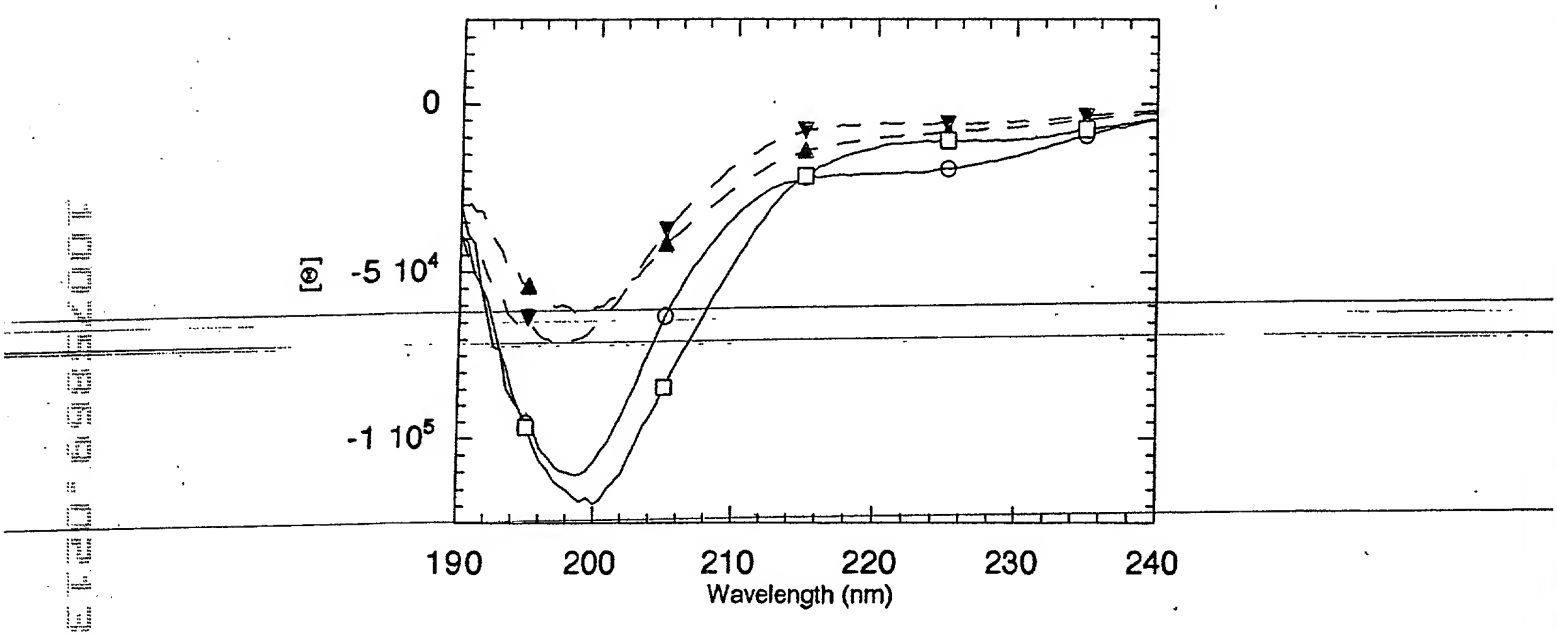


Figure 11B

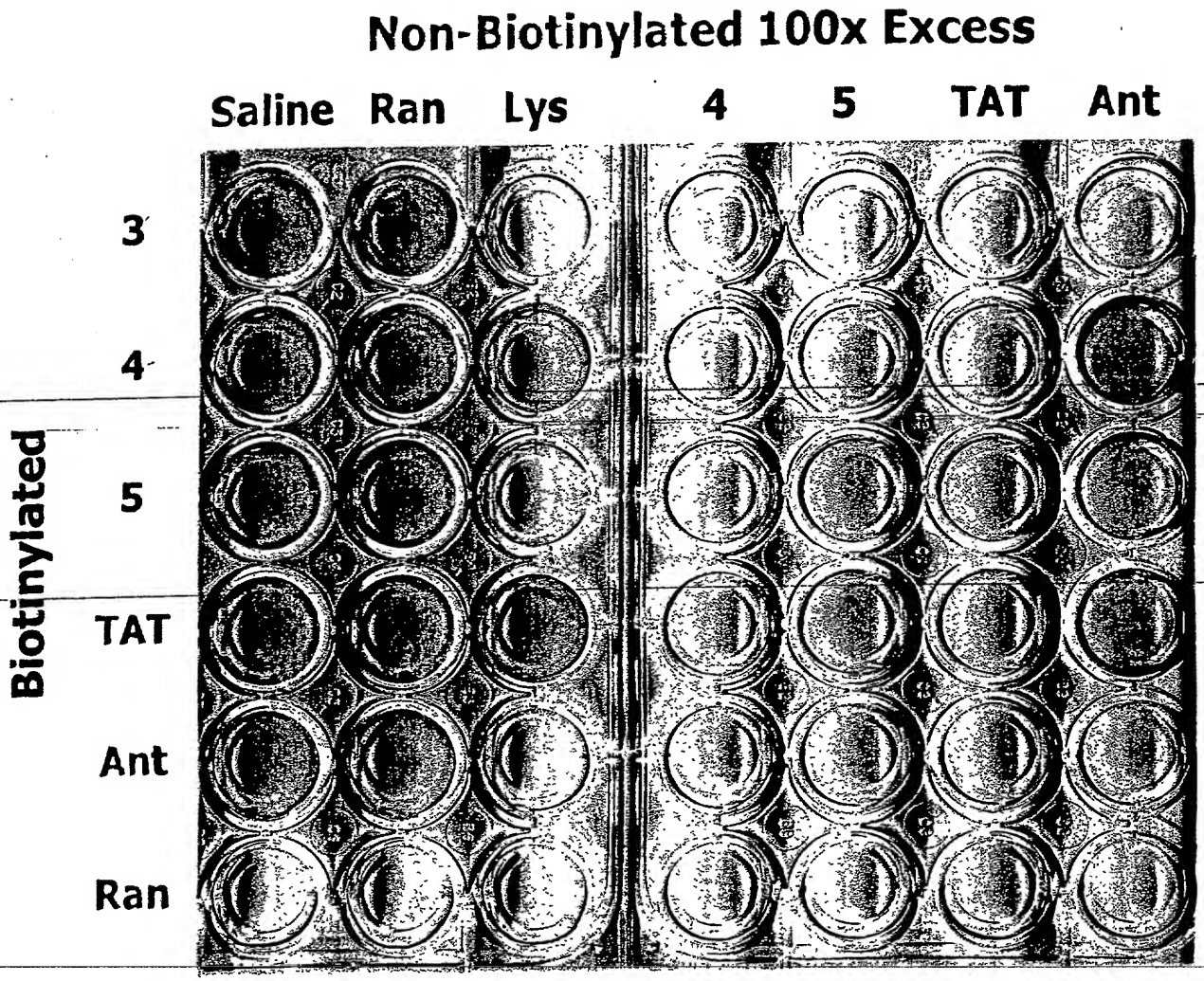

Non-Biotinylated 100x Excess
Saline
Ran
Lys
4
5
TAT
Ant
Biotinylated
3
4
5
TAT
Ant
Ran

Figure 12

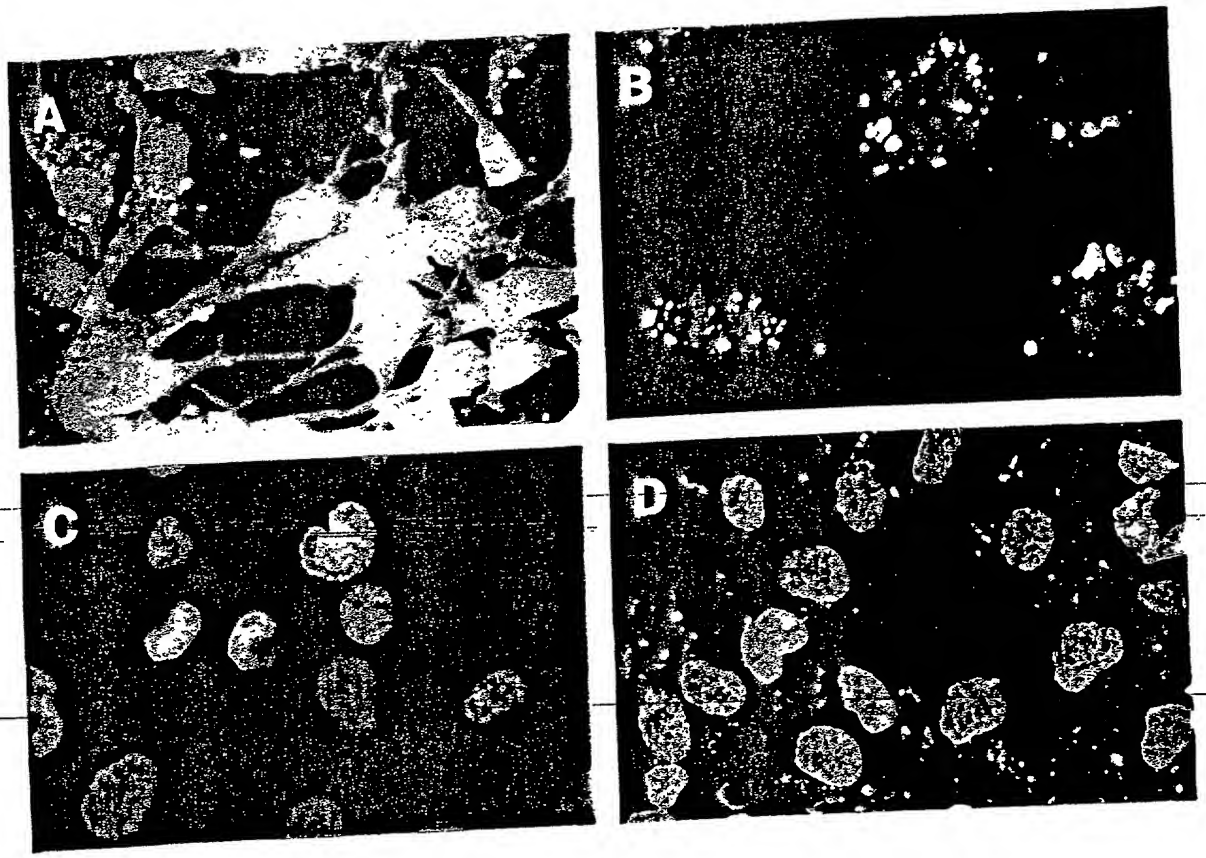


Figure 13

CTP-5-(KLAKLAK)$_2$ Peptide Impairs Cell Viability in Hig 82 Cells

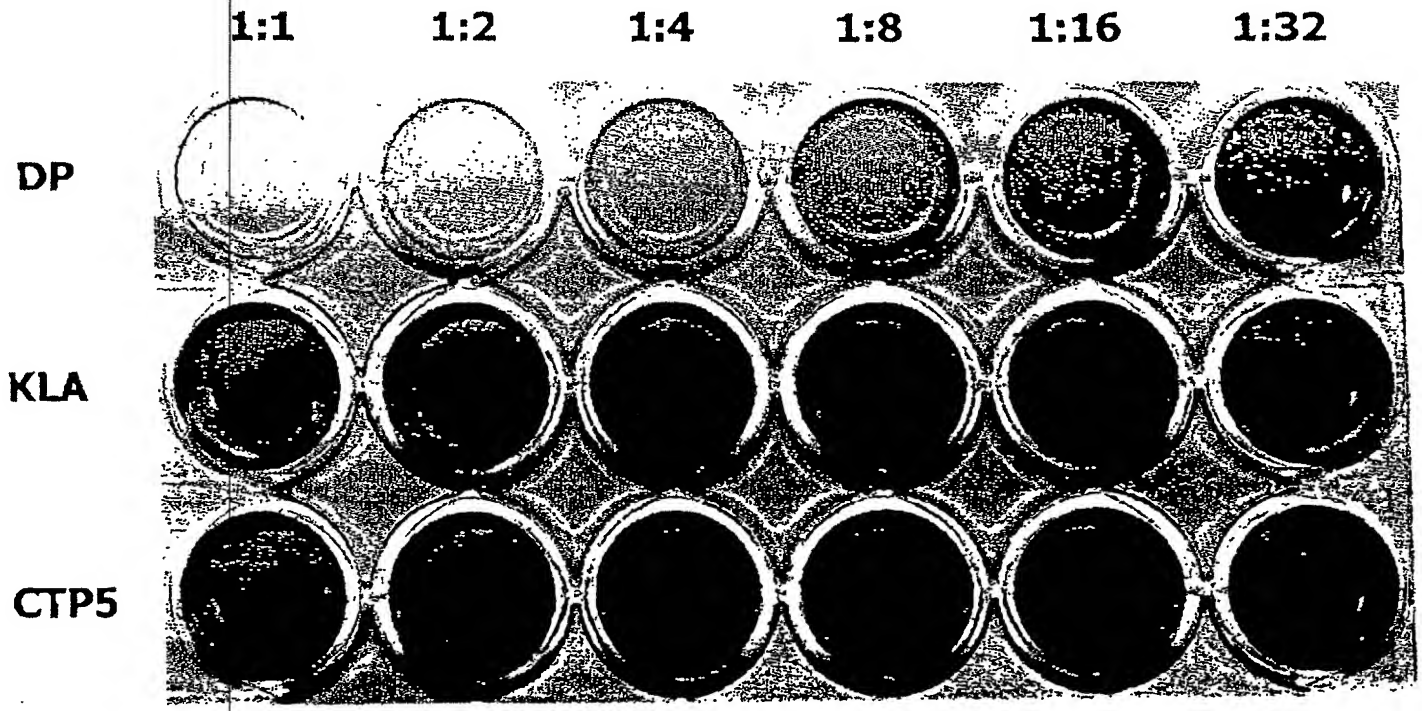


Figure 14

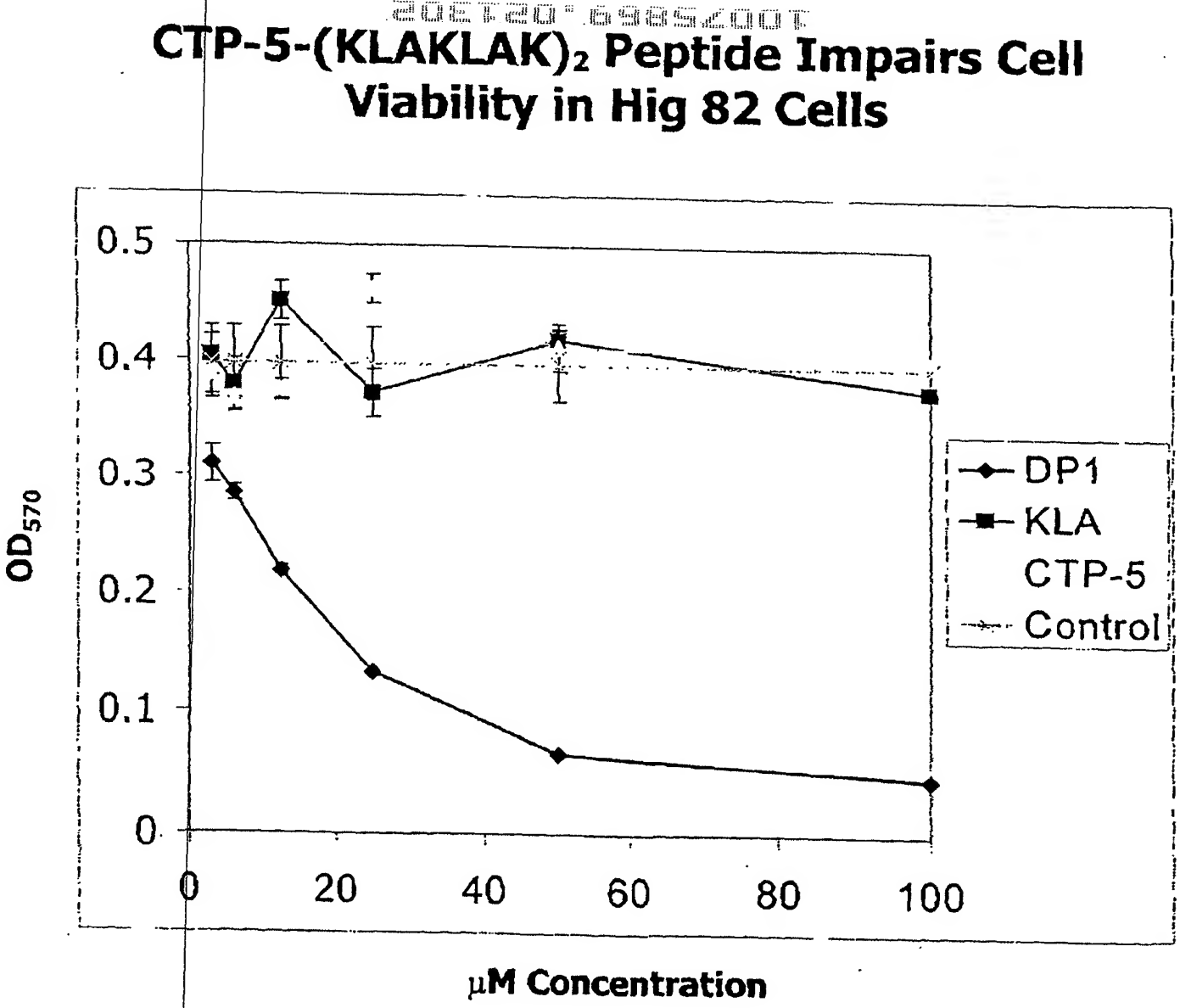


Figure 15

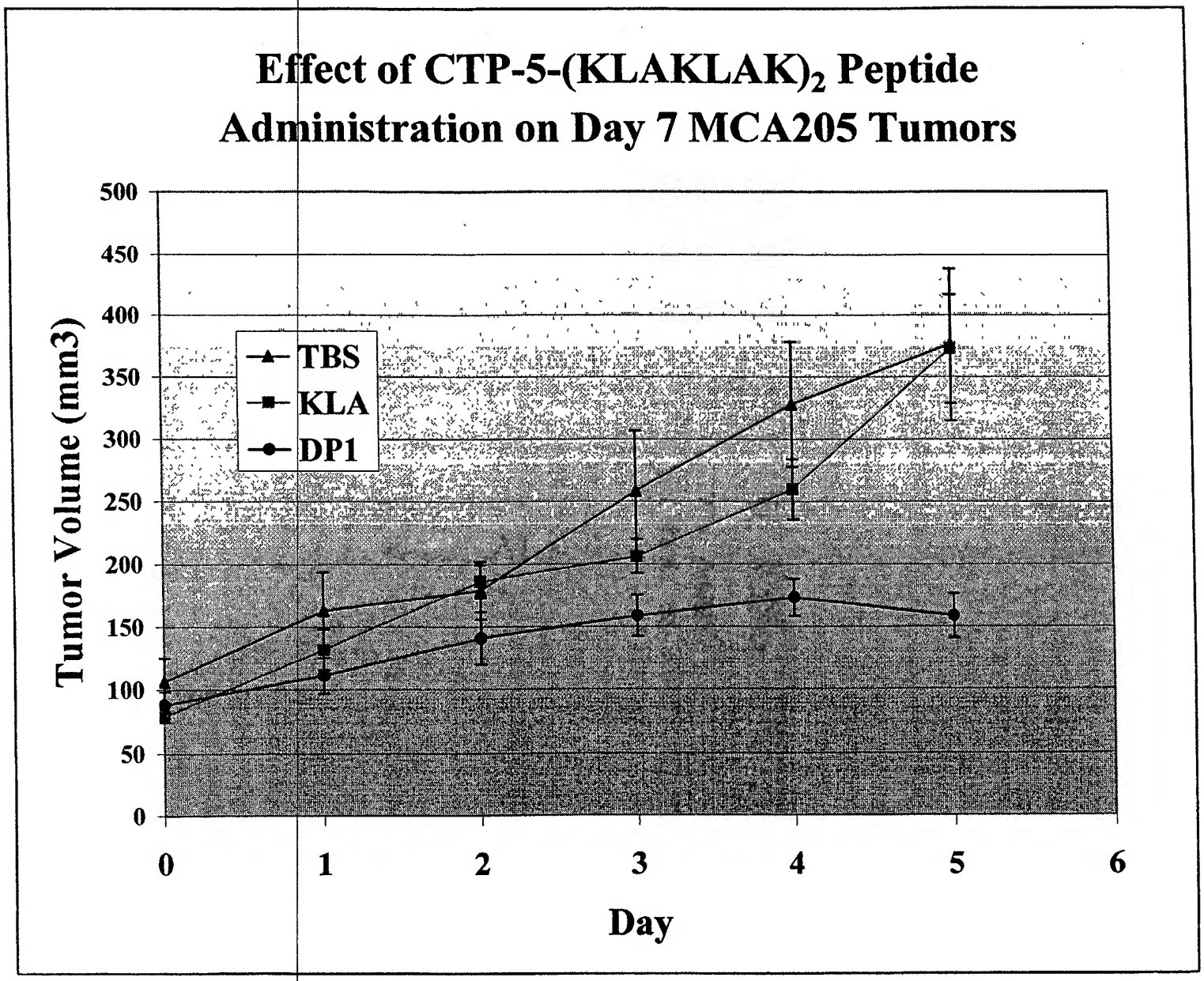


Figure 16A

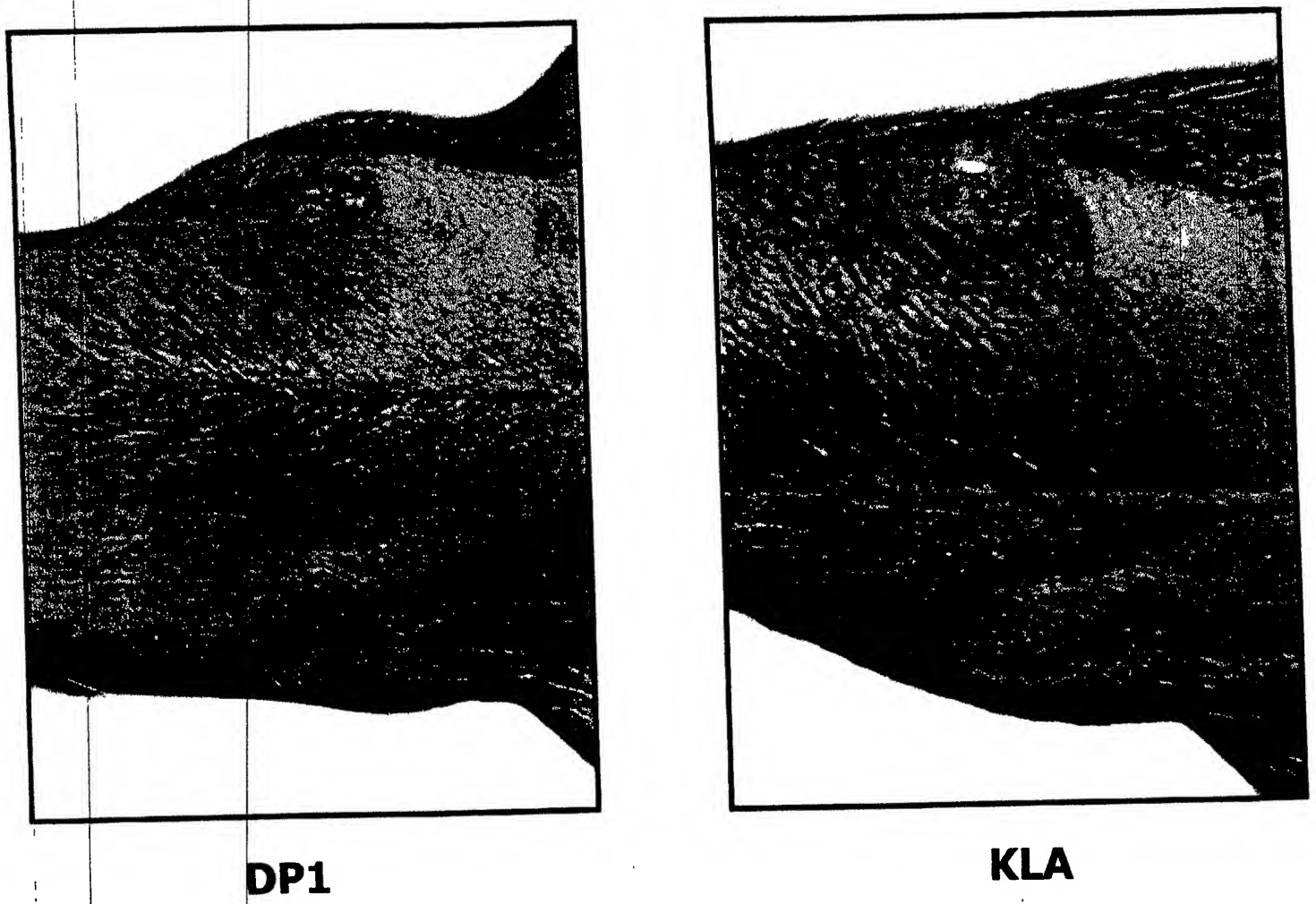


Figure 16B

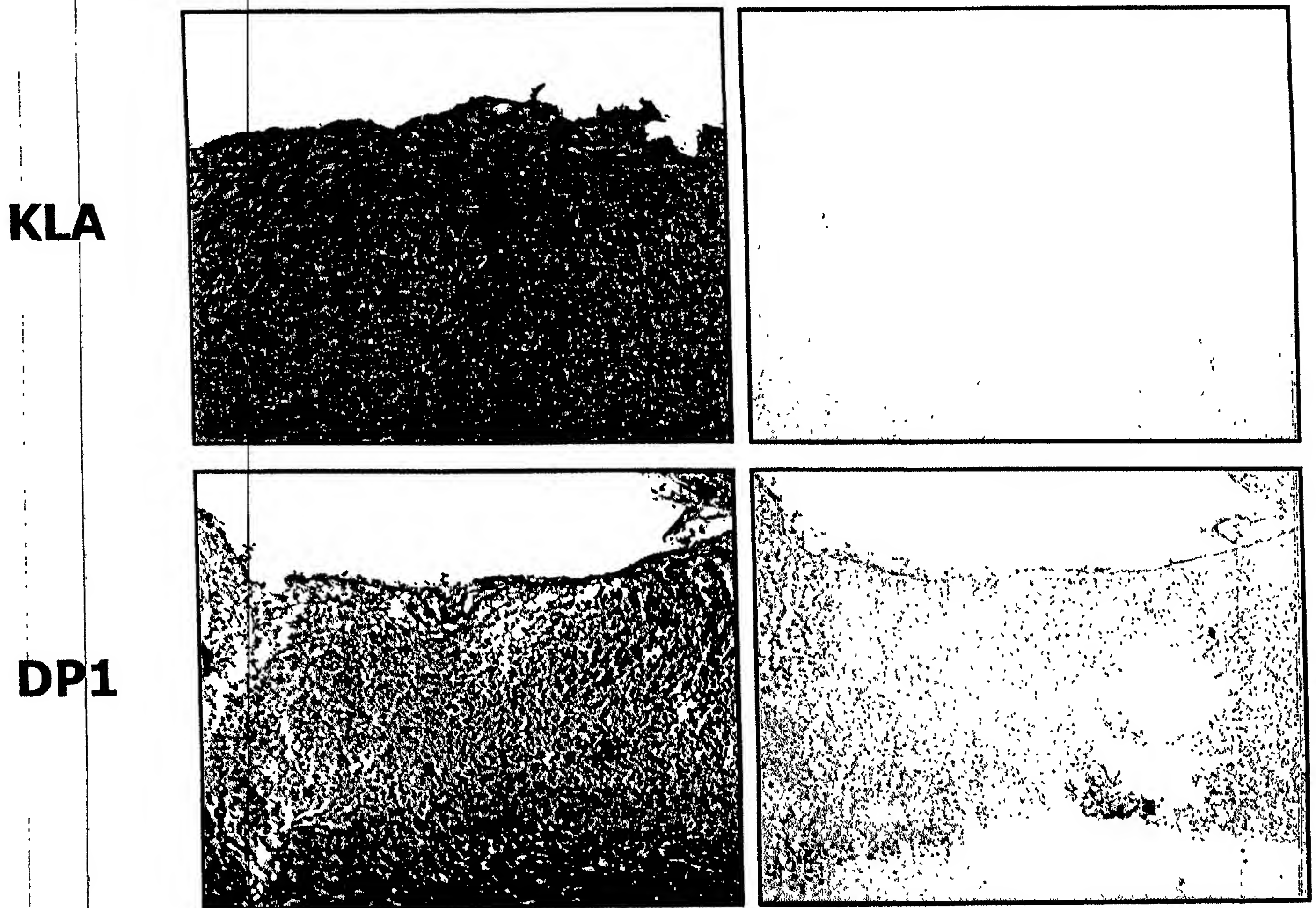


Figure 16C

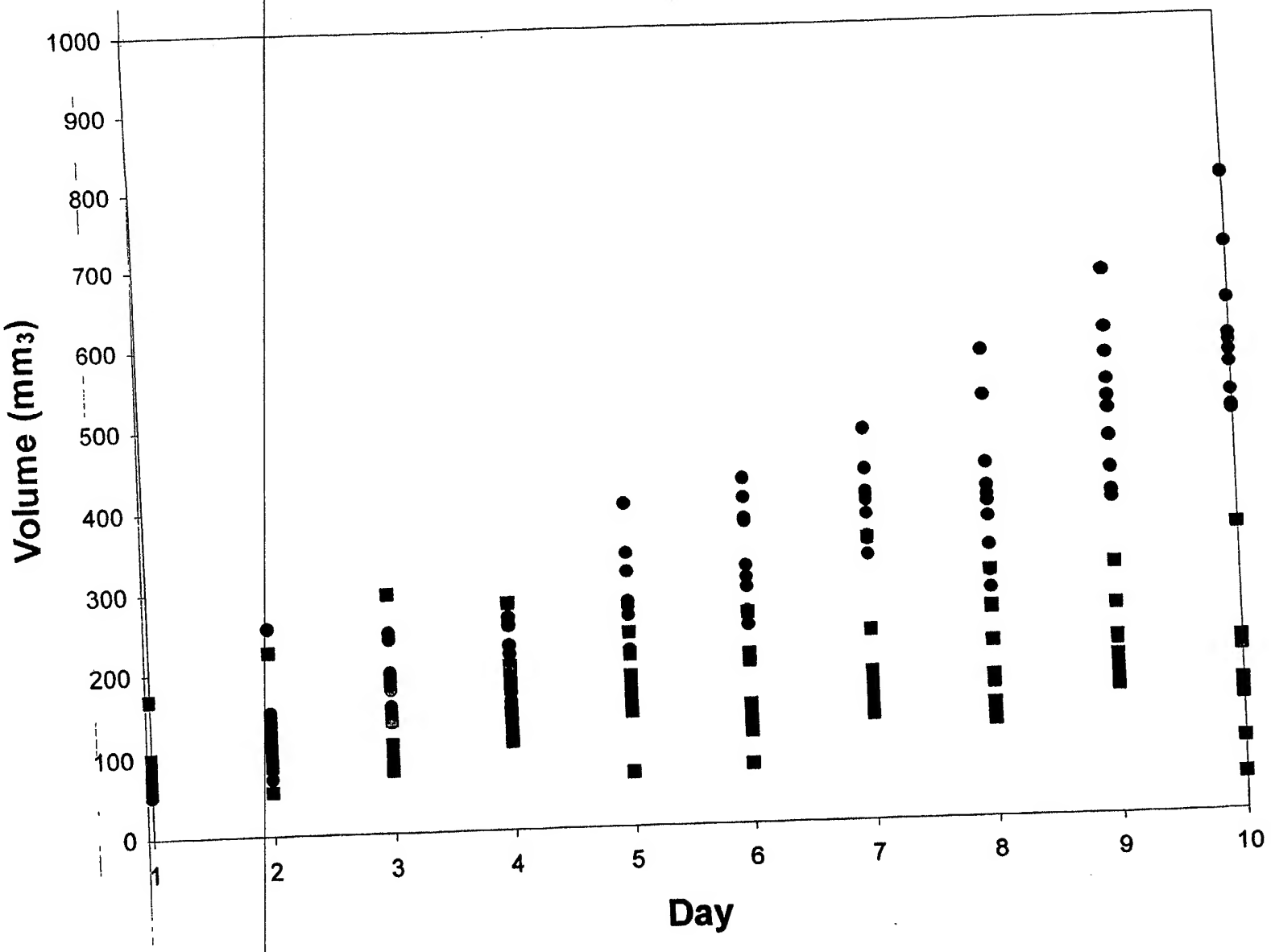


Figure 16D

$CD34^{+}/LIN^{-}$ Stem Cells Are Transduced by a CTP-5-Biotin/Avidin-β-Galactosidase Complex

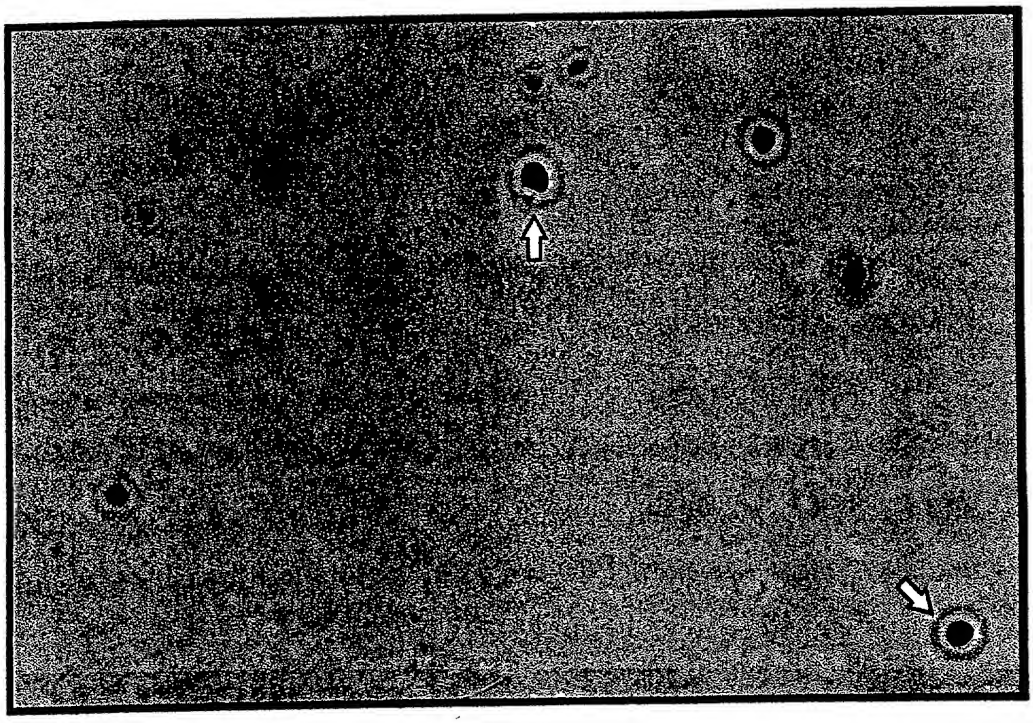


Figure 17

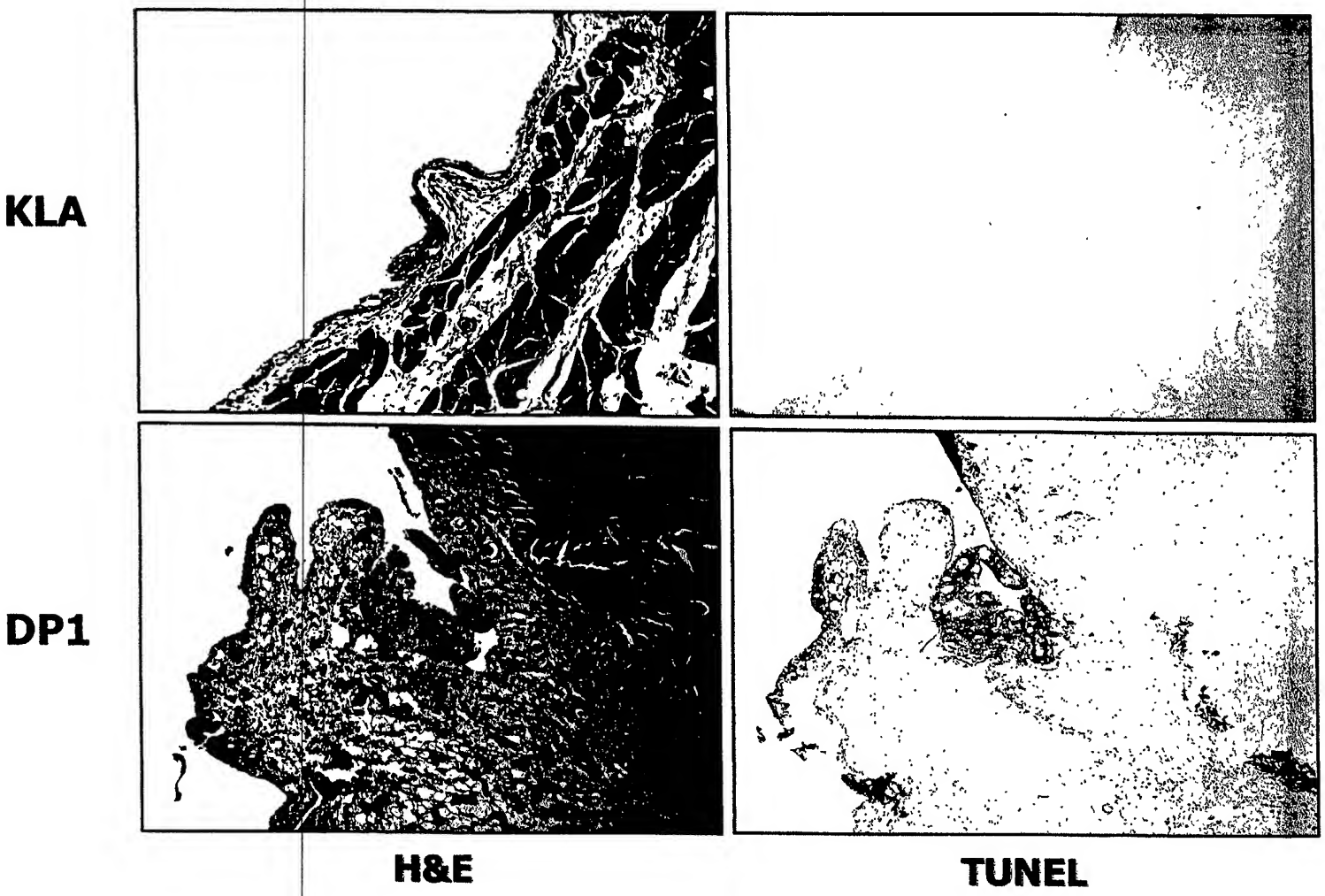


Figure 18

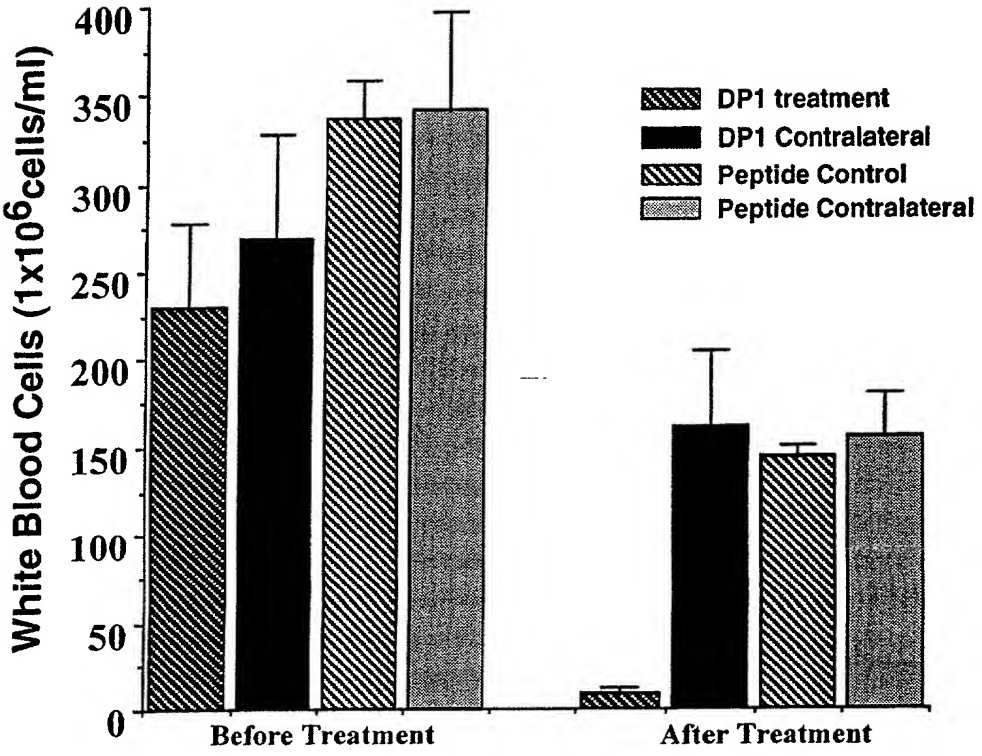

White Blood Cells (1x10^6cells/ml)
400
350
300
250
200
150
100
50
0
Before Treatment
After Treatment
DP1 treatment
DP1 Contralateral
Peptide Control
Peptide Contralateral

Figure 19

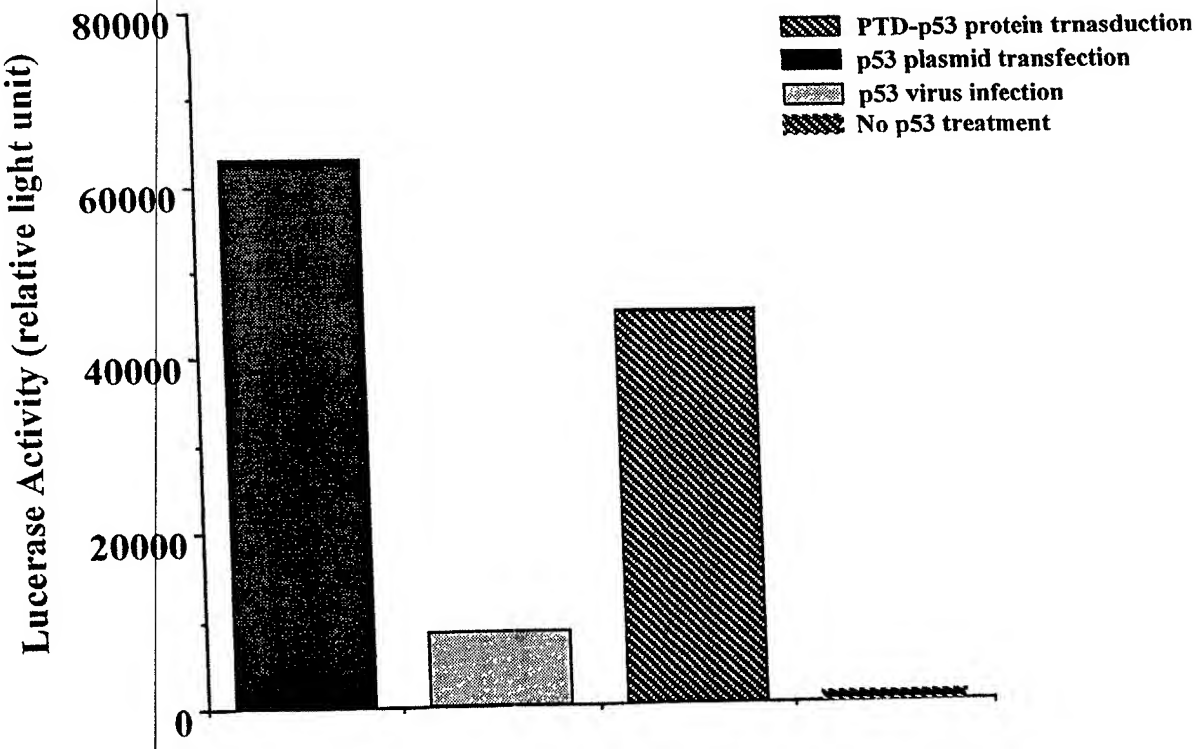


Figure 20

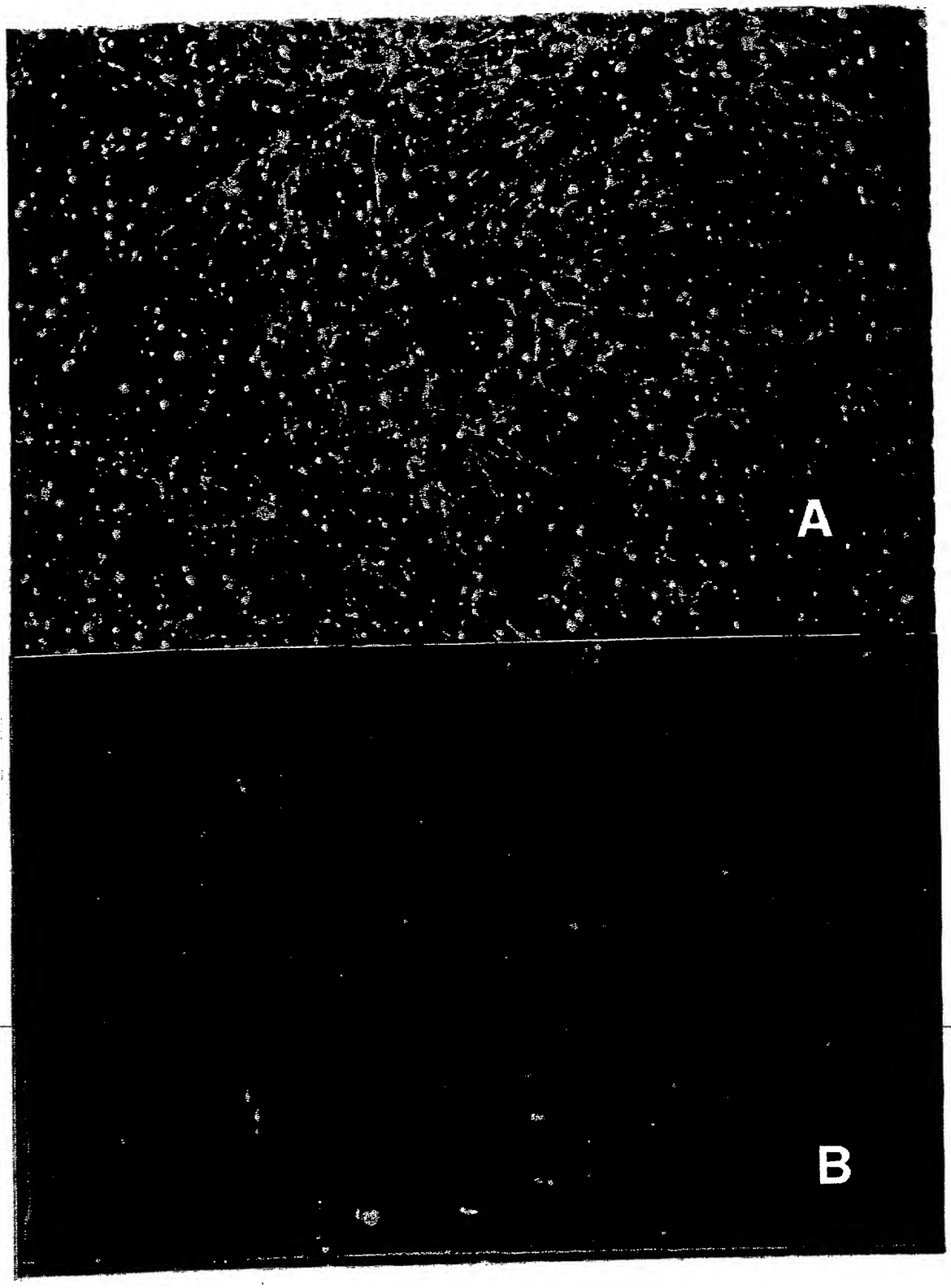


Figure 21

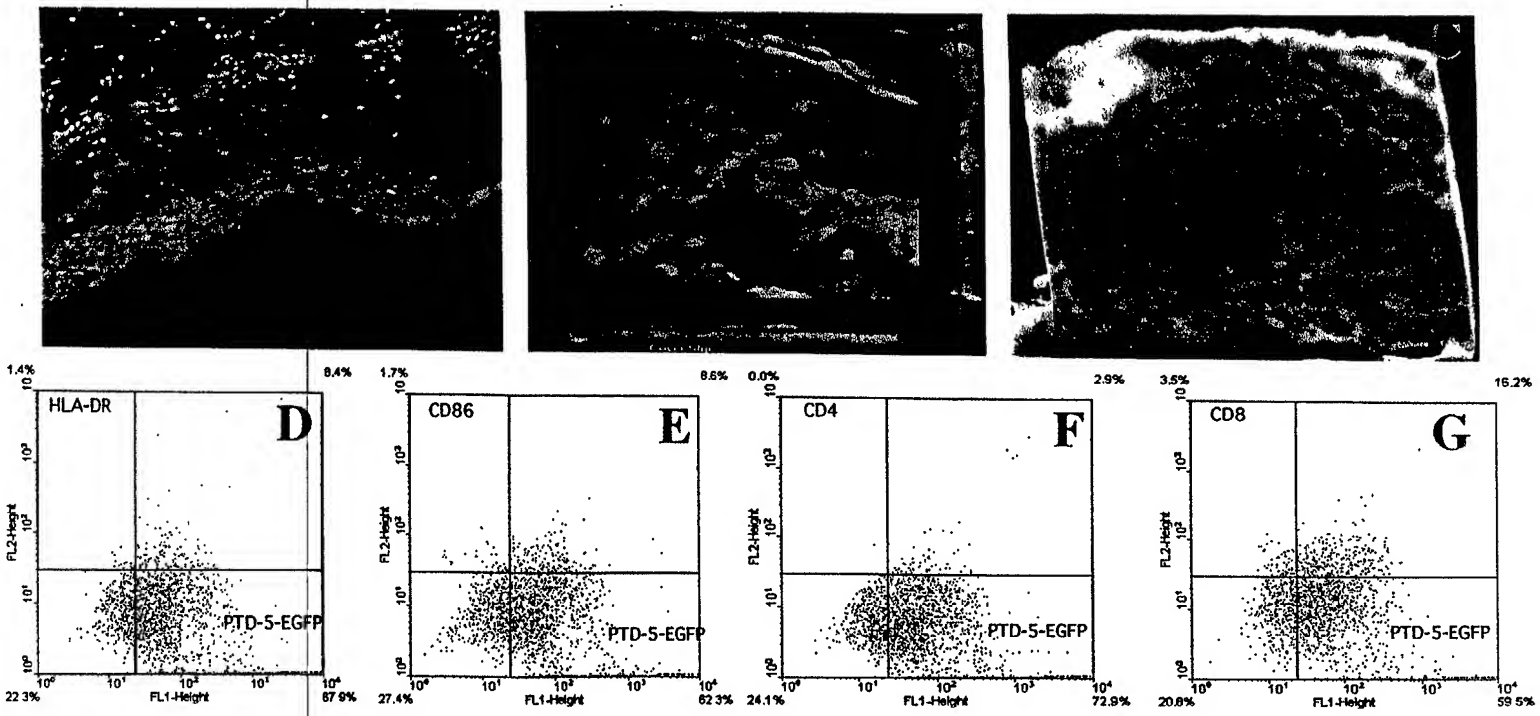

HLA-DR
D
PTD-5-EGFP
1.4%
8.4%
22.3%
87.9%
CD86
E
PTD-5-EGFP
1.7%
8.6%
27.4%
62.3%
CD4
F
PTD-5-EGFP
0.0%
2.9%
24.1%
72.9%
CD8
G
PTD-5-EGFP
3.5%
16.2%
20.8%
59.5%
FL2-Height
FL1-Height

Figure 22

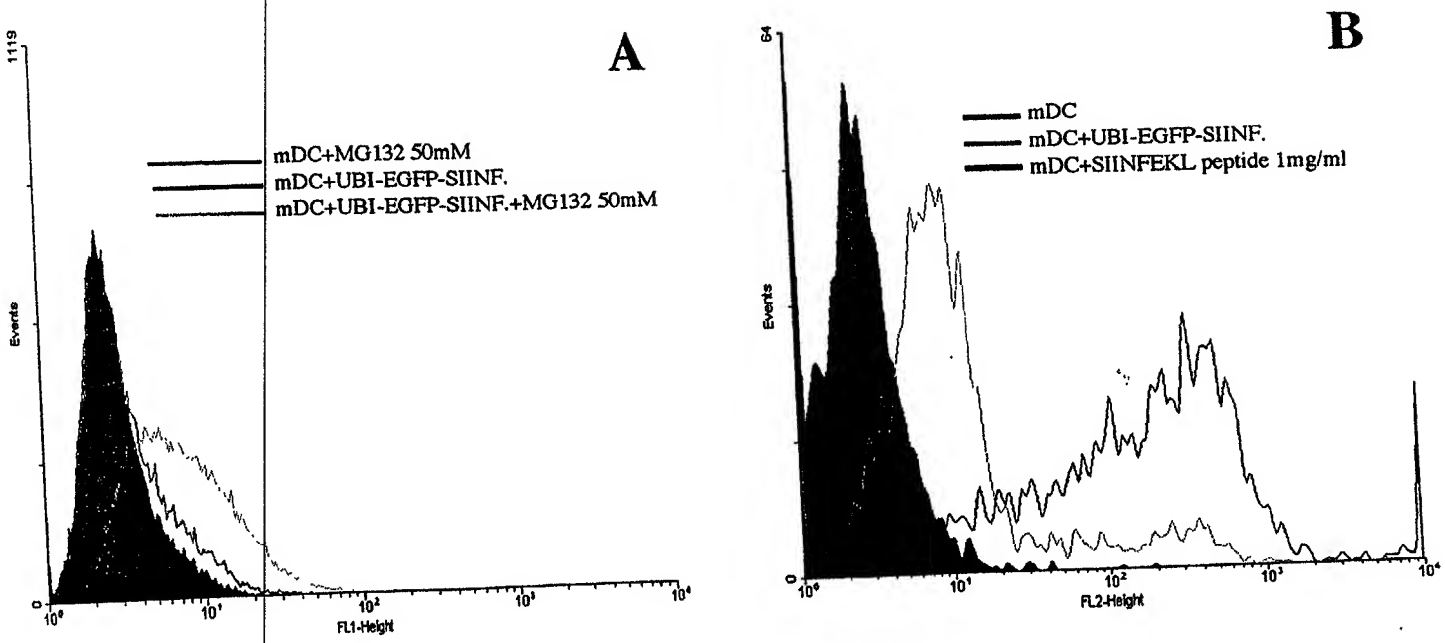
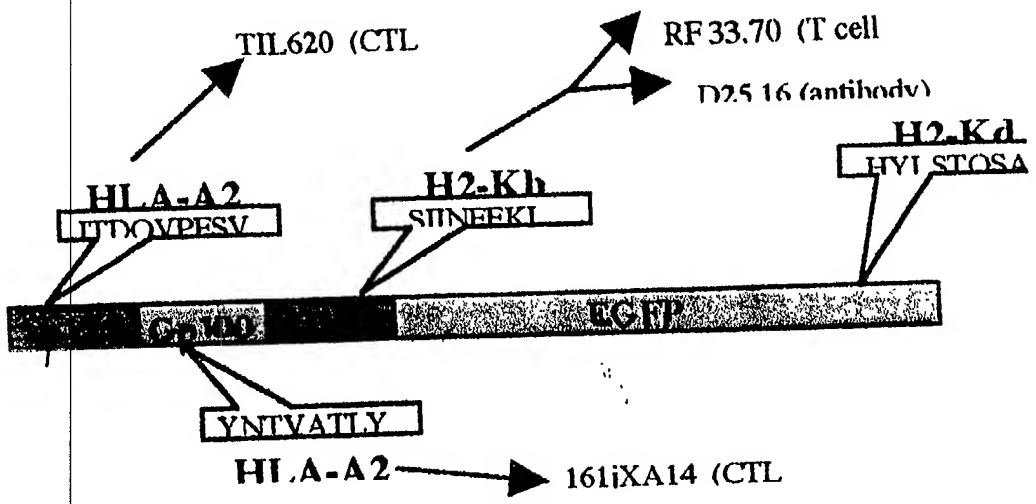


Figure 23



3Epi-EGFP

Figure 24

Fig. 25

PTD-5 and Prostate peptide deliver β-Gal into DU145 tumor cells

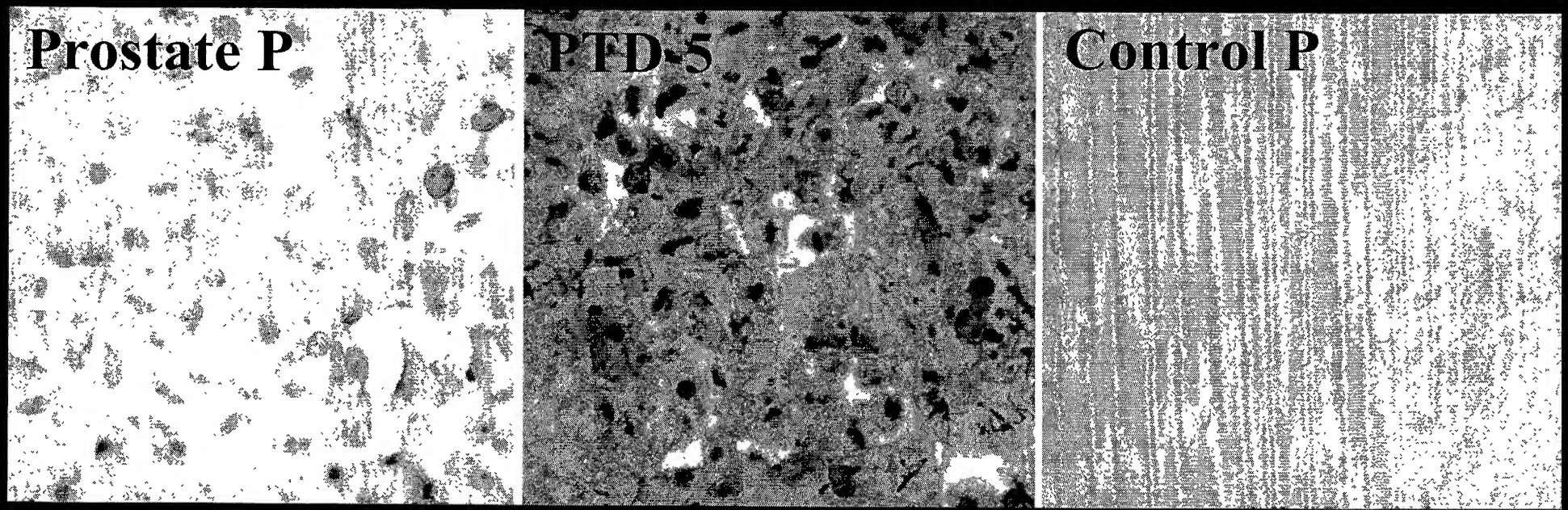
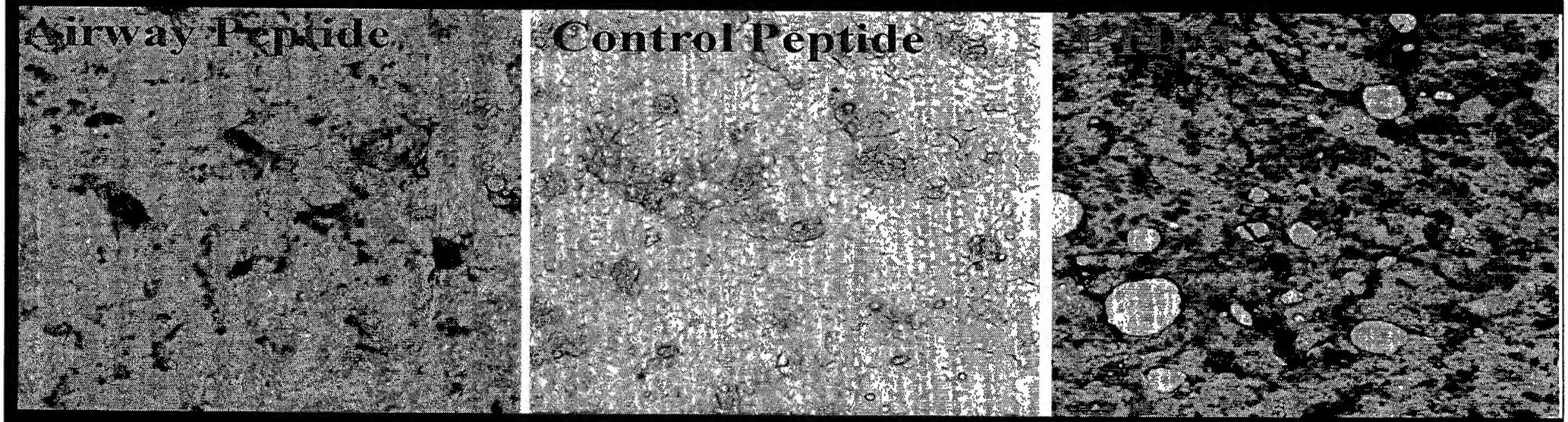


Fig. 26

PTD-5 and Prostate peptide FITC facilitate uptake into DU145 tumor cells

Peptide from Airway Segment Screening Facilitates Uptake of β-Gal and Cy3 into Calu3 Cells



Transduction of CalU3 cells

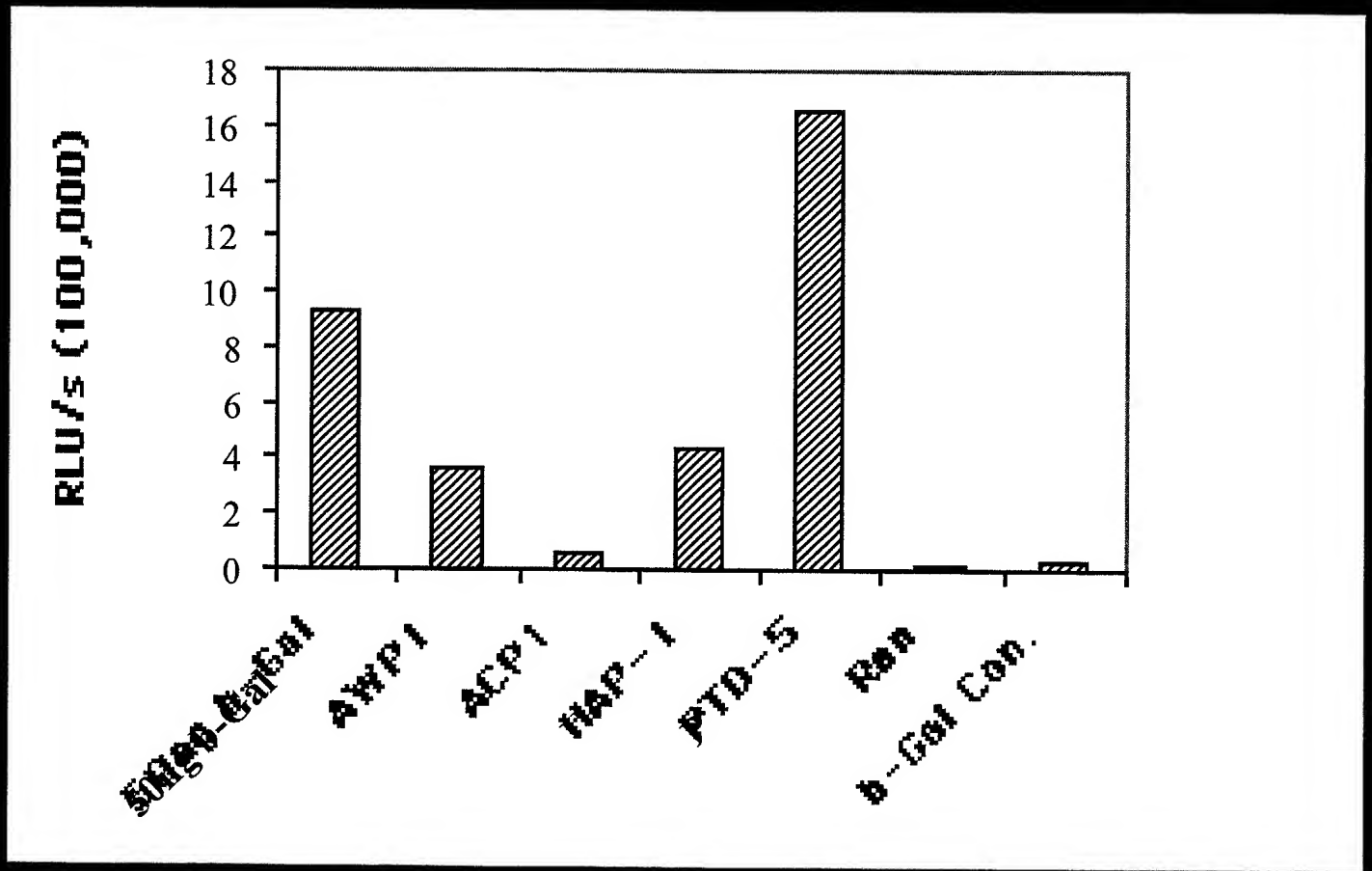


Fig. 29

Transduction of HIG-82 Cells

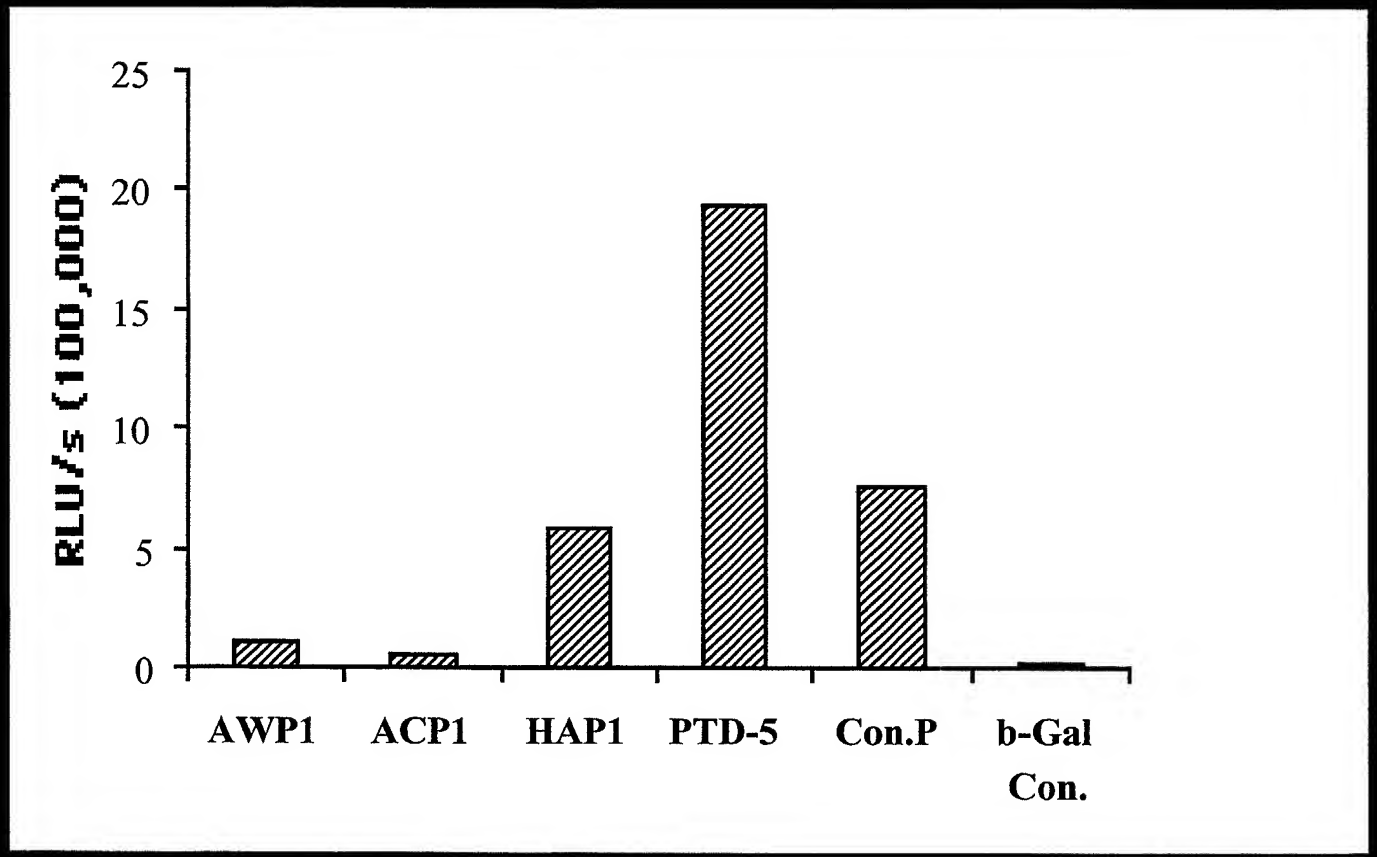


Fig 30

PTD-5 and Airway Peptide Facilitate Delivery of Avidin-β-Gal into Murine Lungs

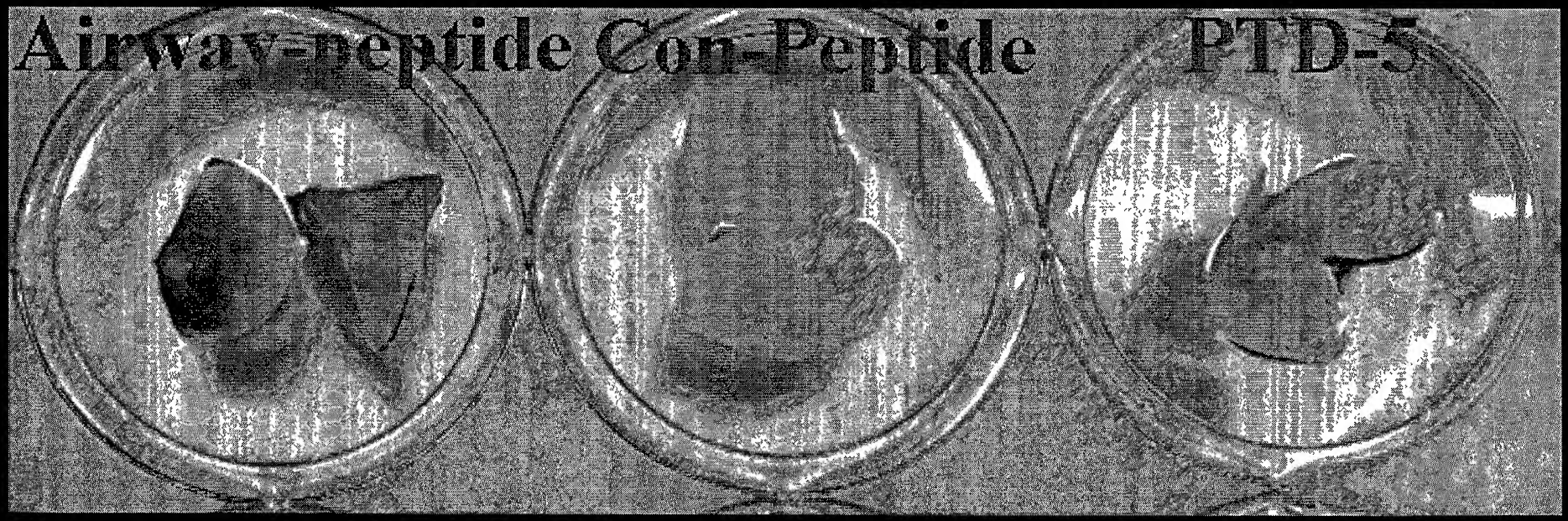


Fig. 31

PTD-5 and Airway Peptide Facilitate β-Gal Uptake into Murine Lungs

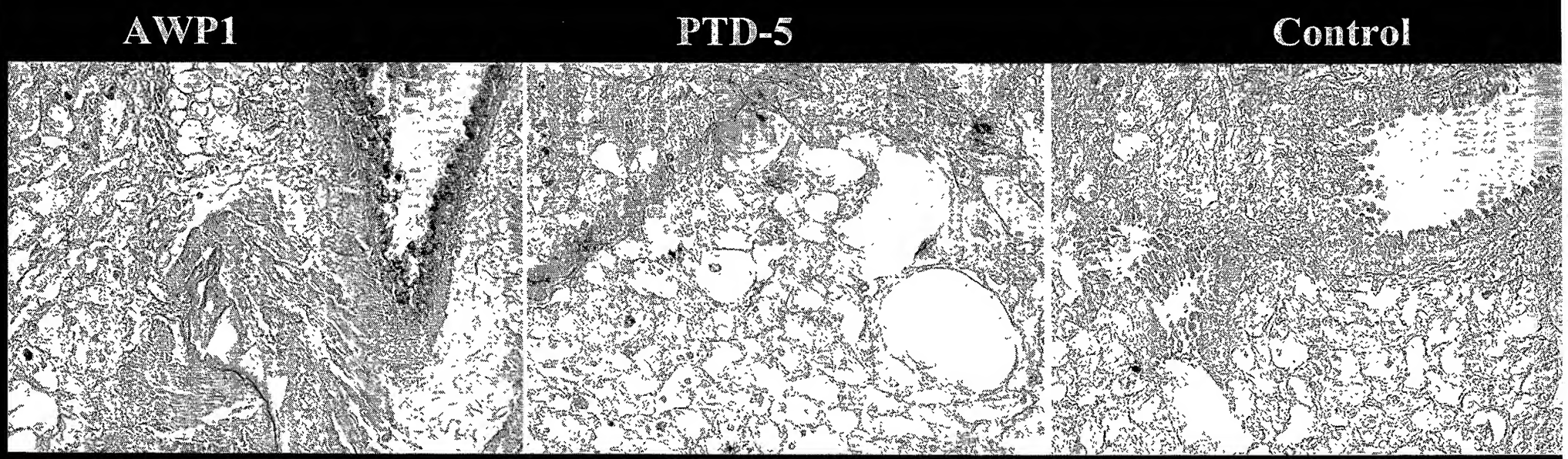


Fig. 32

PTD-5 Delivers Cy3-Anti-Mouse IgG into Hig-82 Cells

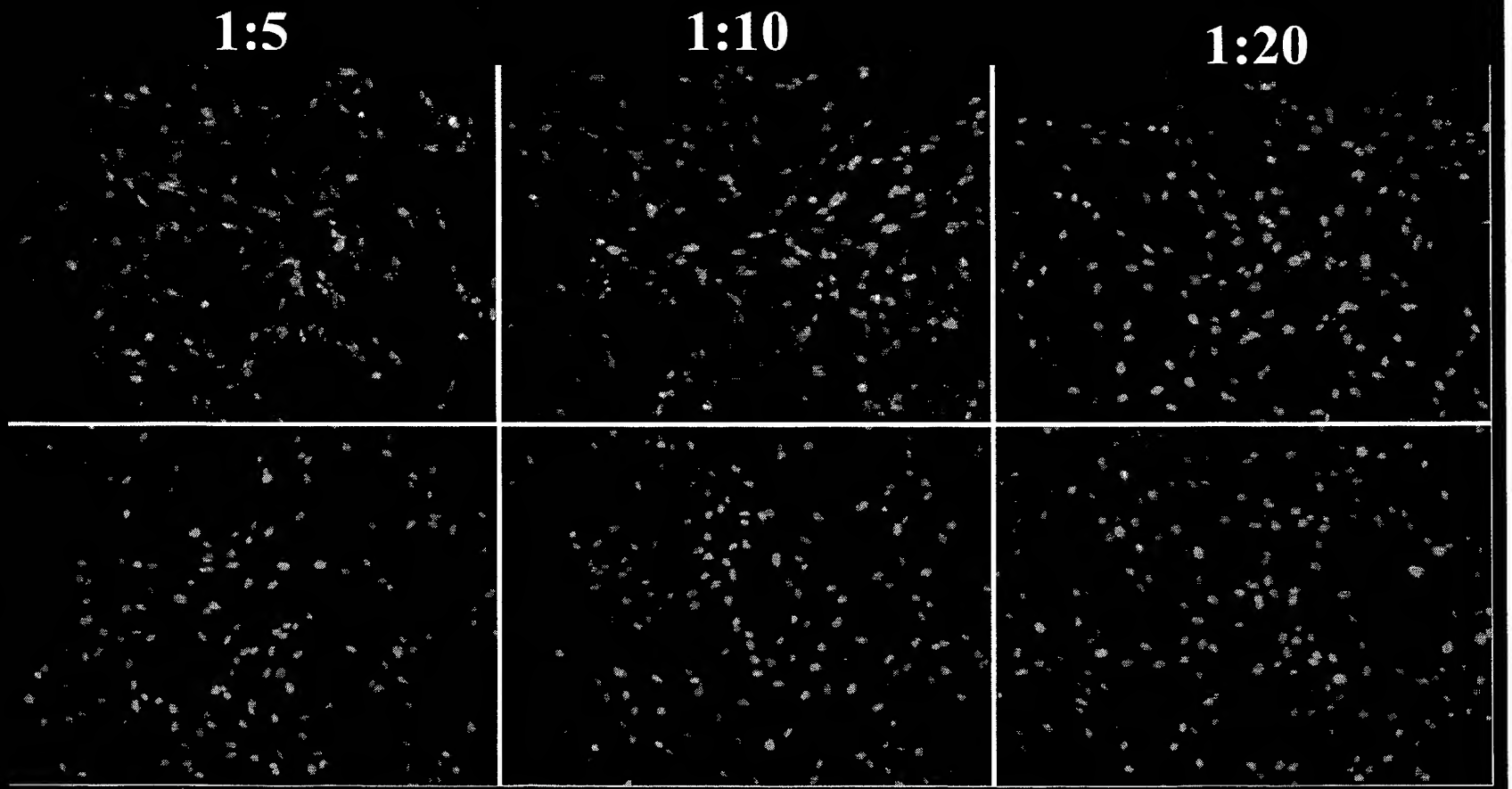
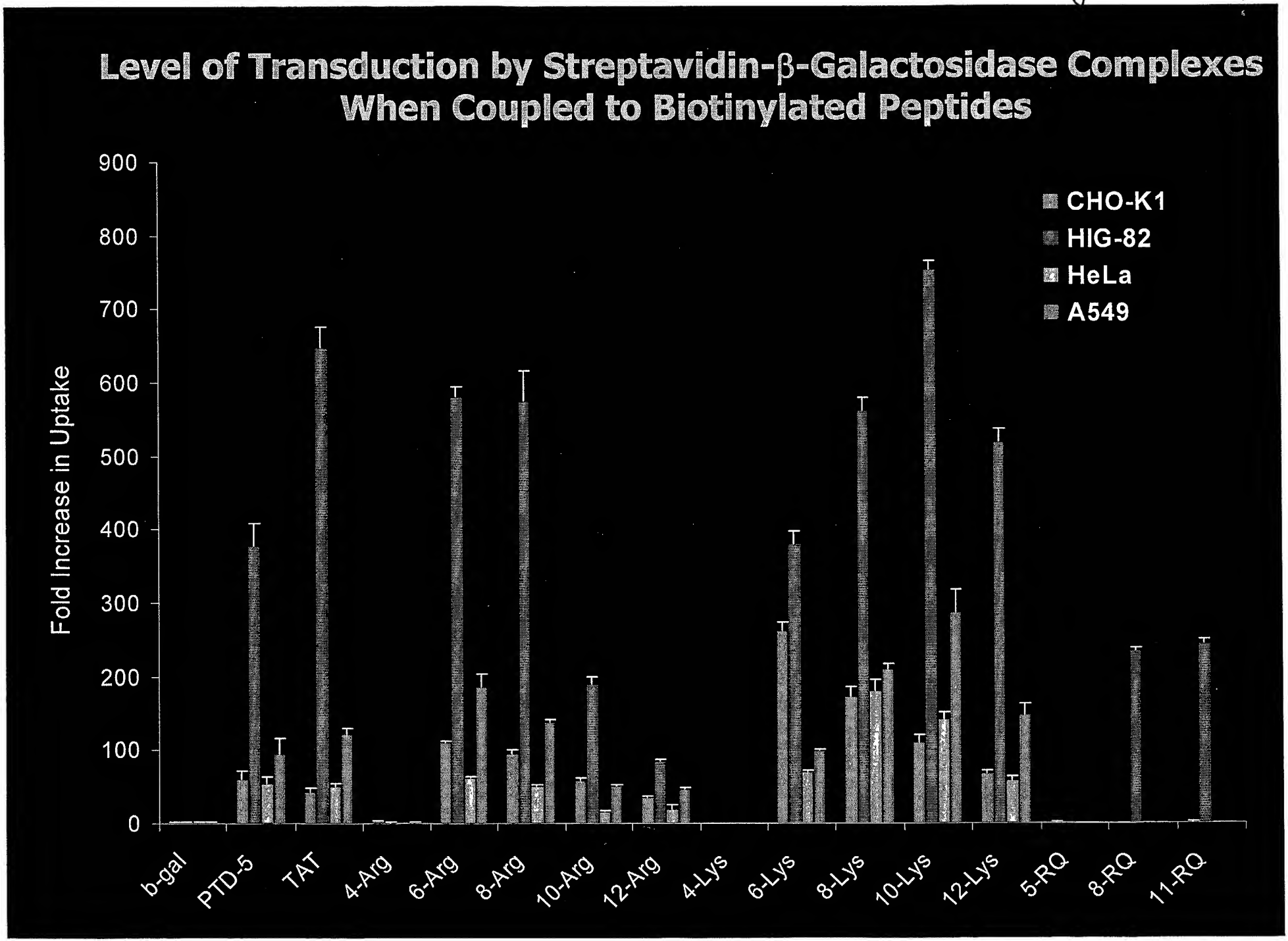


Fig. 33


Level of Transduction by Streptavidin-β-Galactosidase Complexes When Coupled to Biotinylated Peptides
Fold Increase in Uptake
900
800
700
600
500
400
300
200
100
0
CHO-K1
HIG-82
HeLa
A549
b-gal
PTD-5
TAT
4-Arg
6-Arg
8-Arg
10-Arg
12-Arg
4-Lys
6-Lys
8-Lys
10-Lys
12-Lys
5-RQ
8-RQ
11-RQ

Cationic PTDs Transduce Human β-Cells with Varying Efficiencies

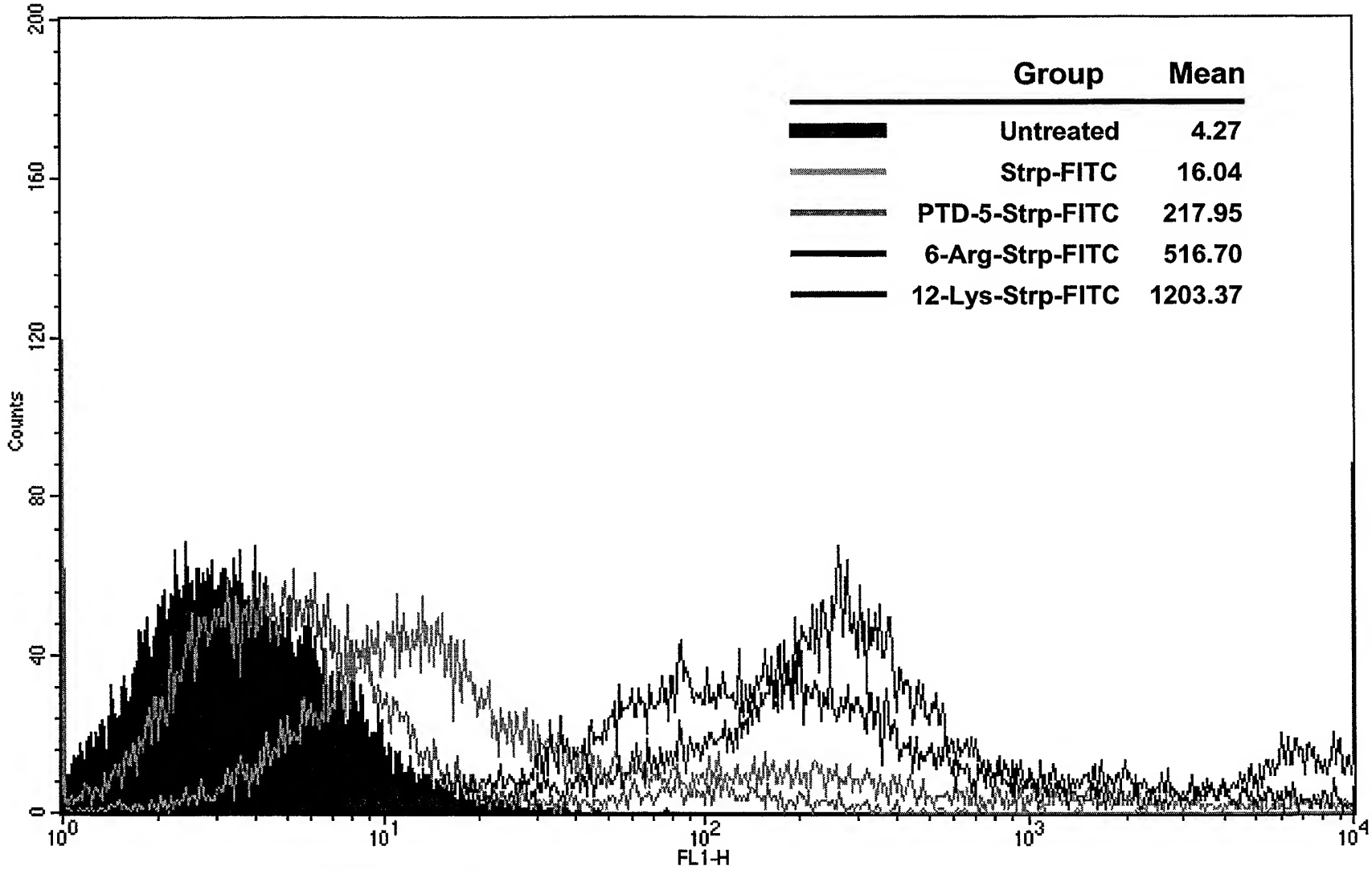
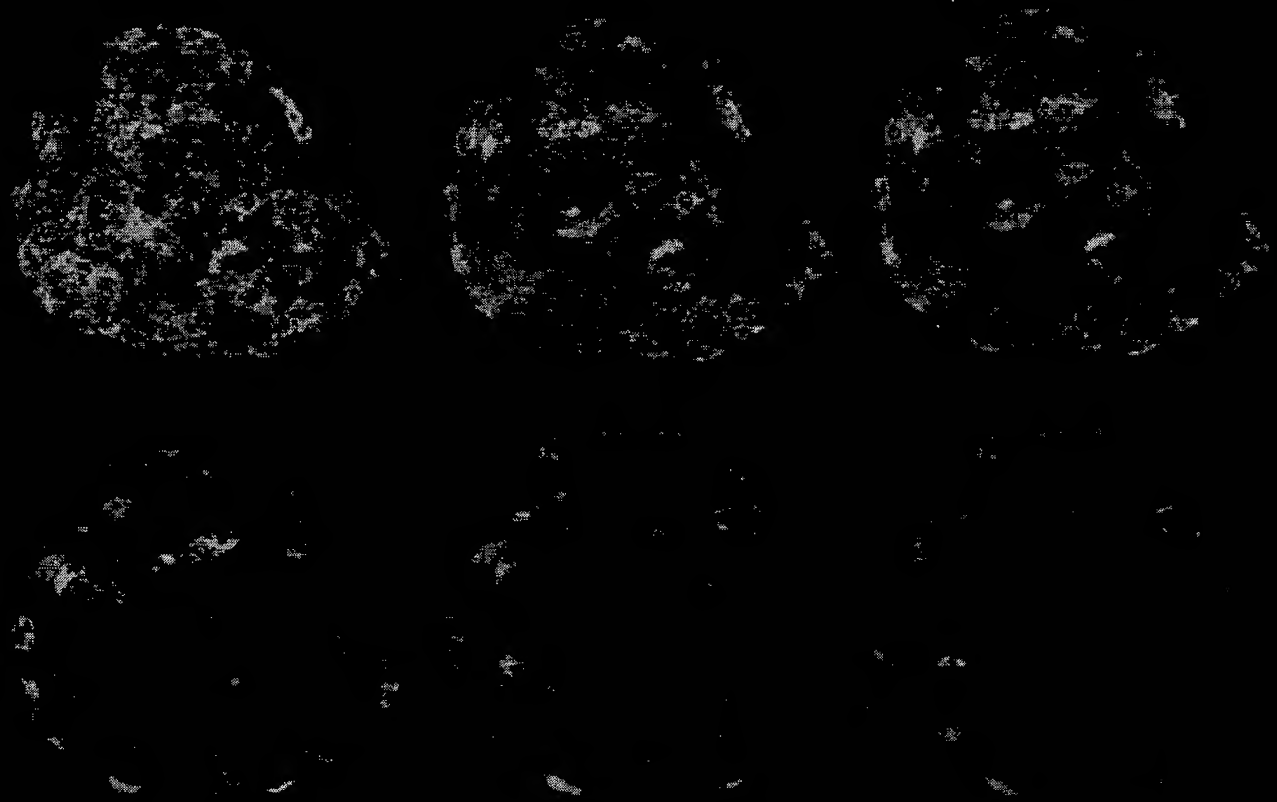


Fig. 35

Transduction of PTD-EGFP Into Human Islet



PTD-5	EGFP	HHHHHH

Fig 3b

Uptake of Peptide-Biotin-Streptavidin-β-Galactosidase Complexes Is Impaired in CHO Cells Defective for HS & GAG Synthesis

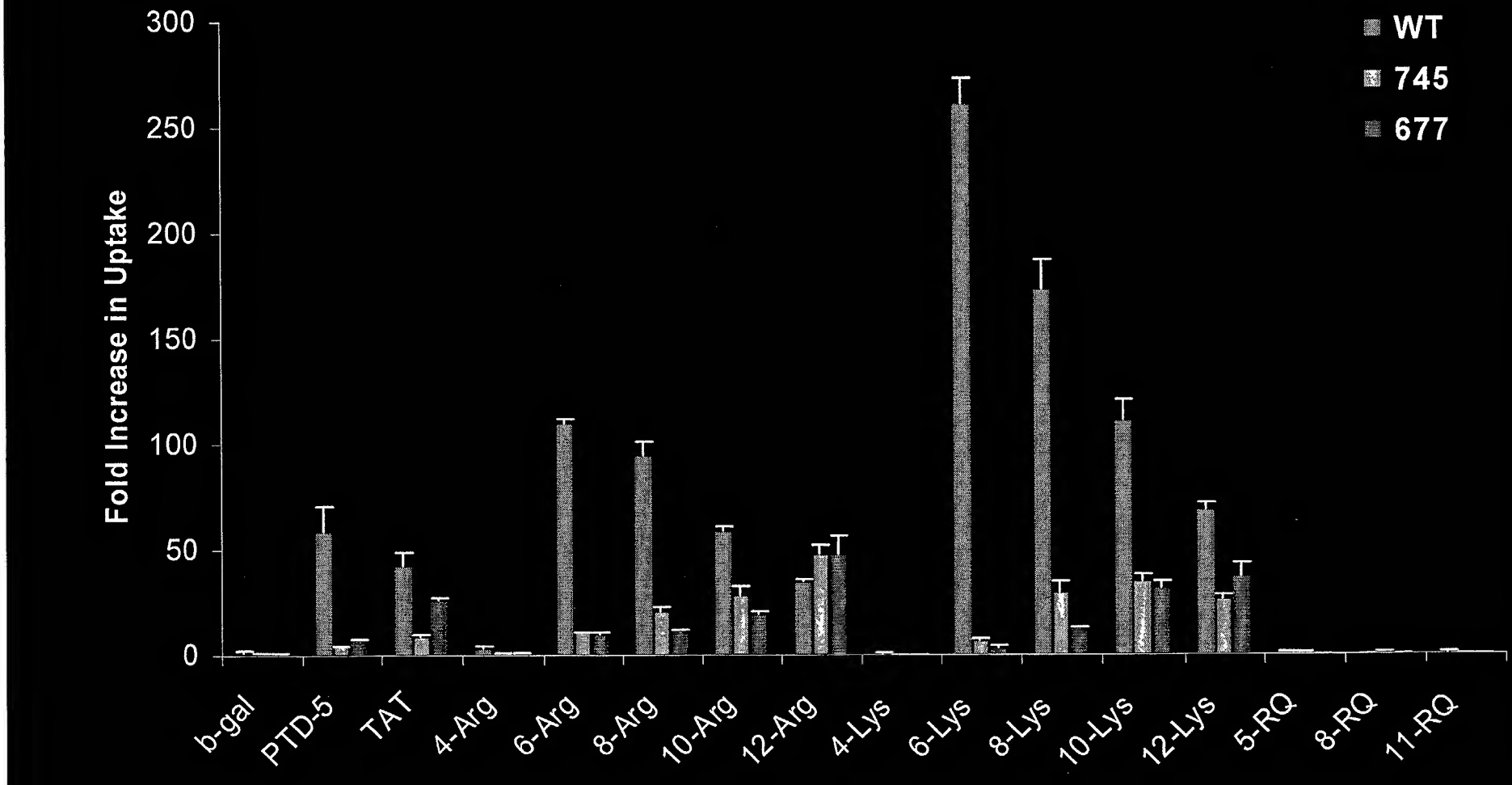


Fig 37

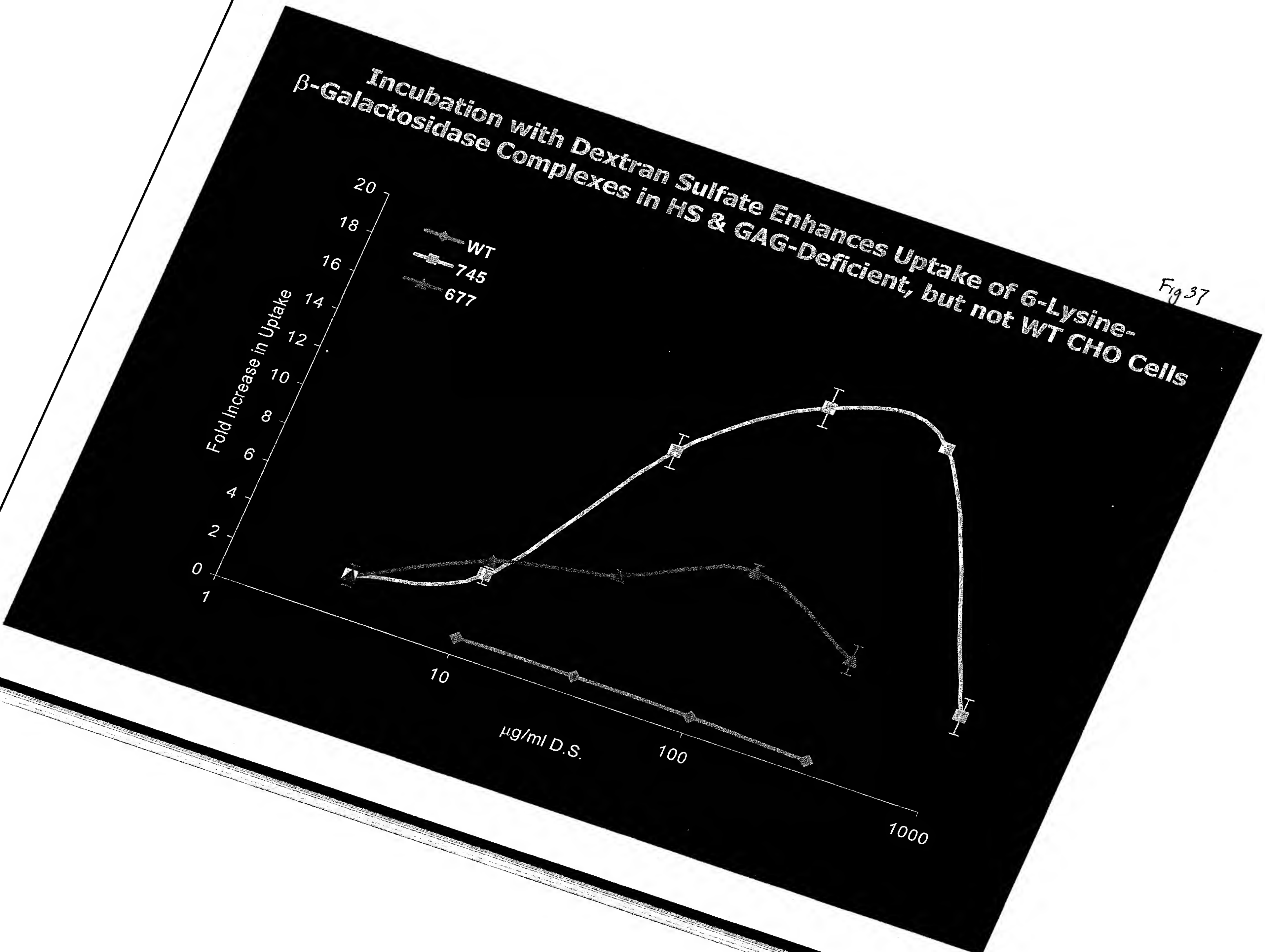

Incubation with Dextran Sulfate Enhances Uptake of 6-Lysine-
β-Galactosidase Complexes in HS & GAG-Deficient, but not WT CHO Cells
WT
745
677
Fold Increase in Uptake
0
2
4
6
8
10
12
14
16
18
20
1
10
100
1000
μg/ml D.S.

Fig 38

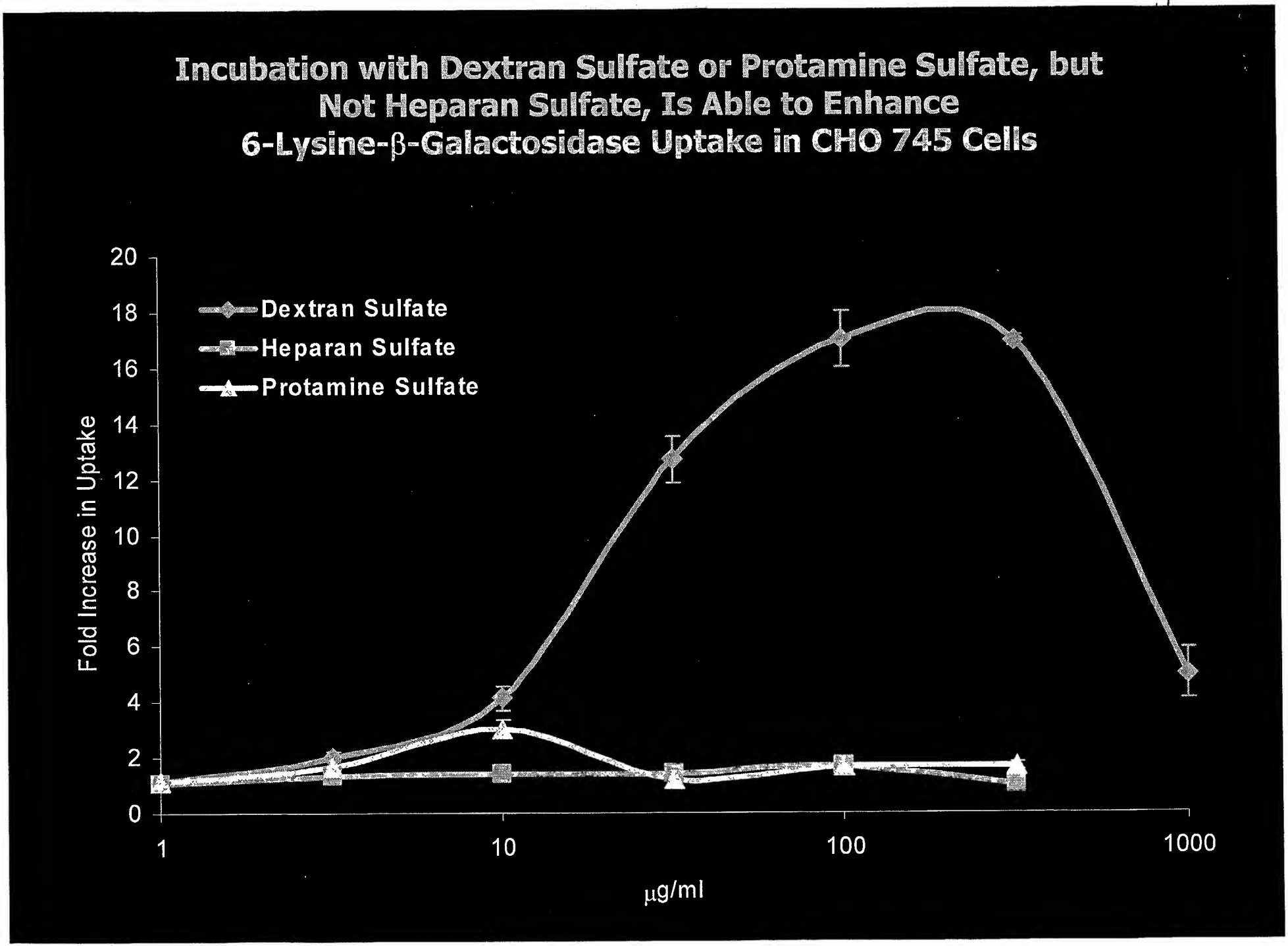

Incubation with Dextran Sulfate or Protamine Sulfate, but Not Heparan Sulfate, Is Able to Enhance 6-Lysine-β-Galactosidase Uptake in CHO 745 Cells
Dextran Sulfate
Heparan Sulfate
Protamine Sulfate
Fold Increase in Uptake
0
2
4
6
8
10
12
14
16
18
20
1
10
100
1000
µg/ml

Fig39

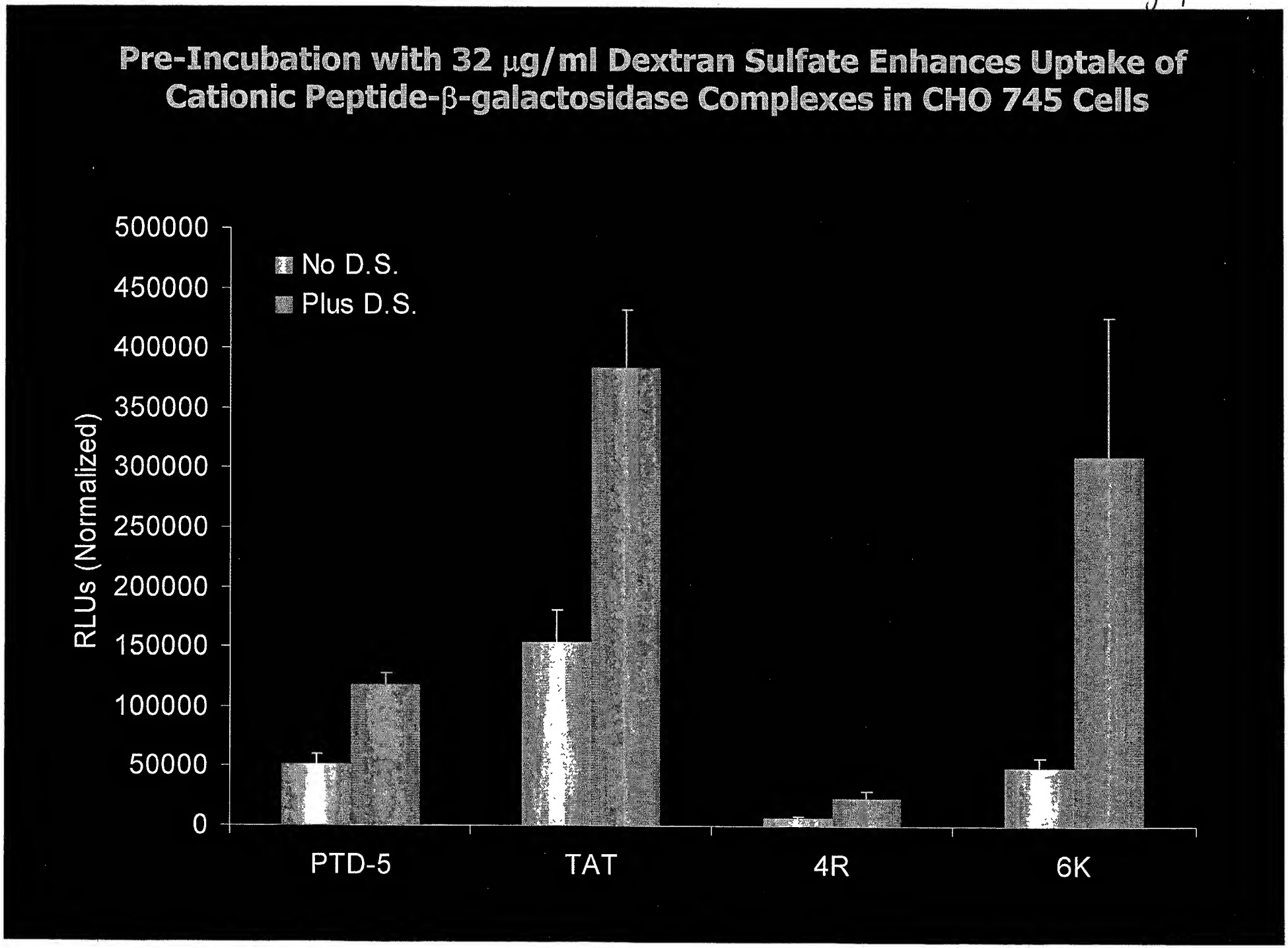
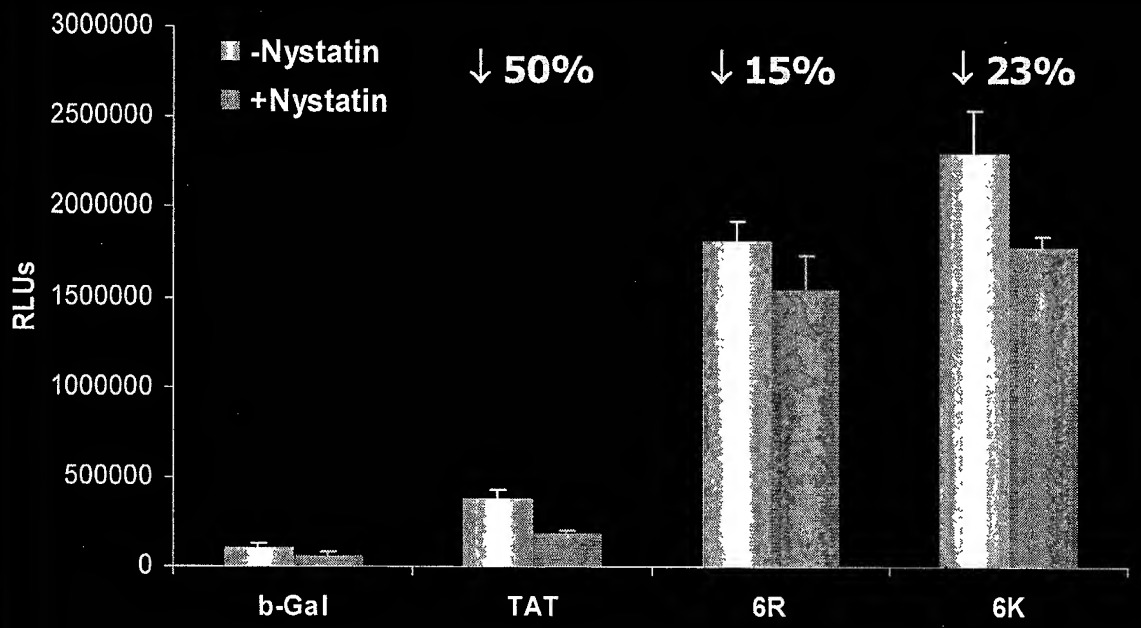
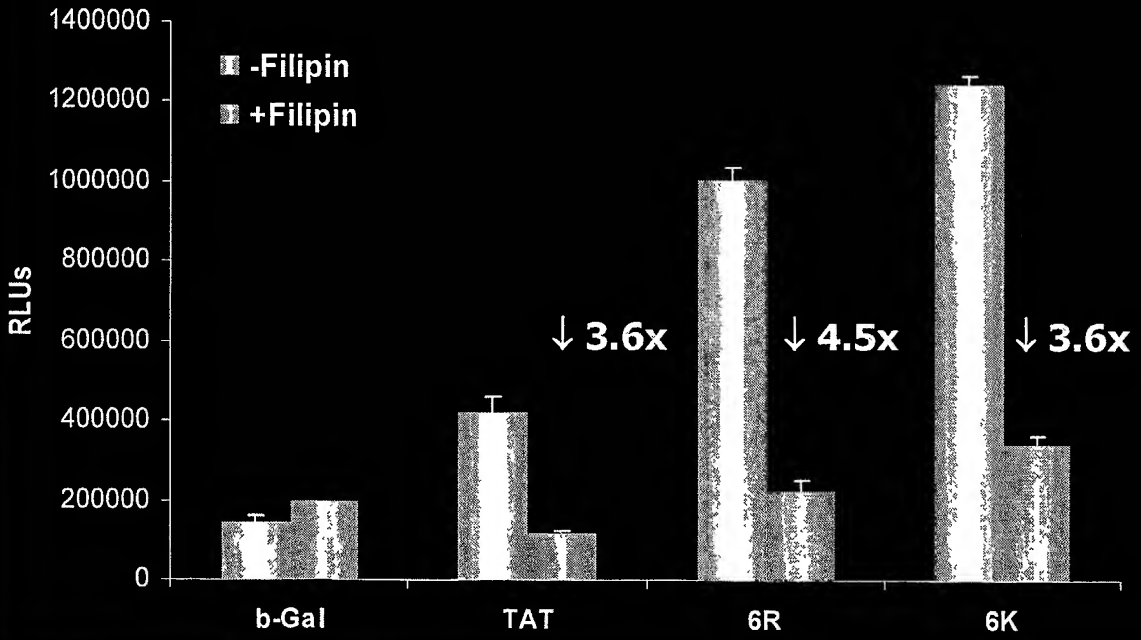

Pre-Incubation with 32 μg/ml Dextran Sulfate Enhances Uptake of Cationic Peptide-β-galactosidase Complexes in CHO 745 Cells
RLUs (Normalized)
500000
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
No D.S.
Plus D.S.
PTD-5
TAT
4R
6K

Fig. 40





Incubation with 50 μg/ml Nystatin or 5 μg/ml Filipin III Reduces Uptake by Peptide-β-Galactosidase Complexes

Approaches for Peptide-Mediated Inhibition of NF-kB

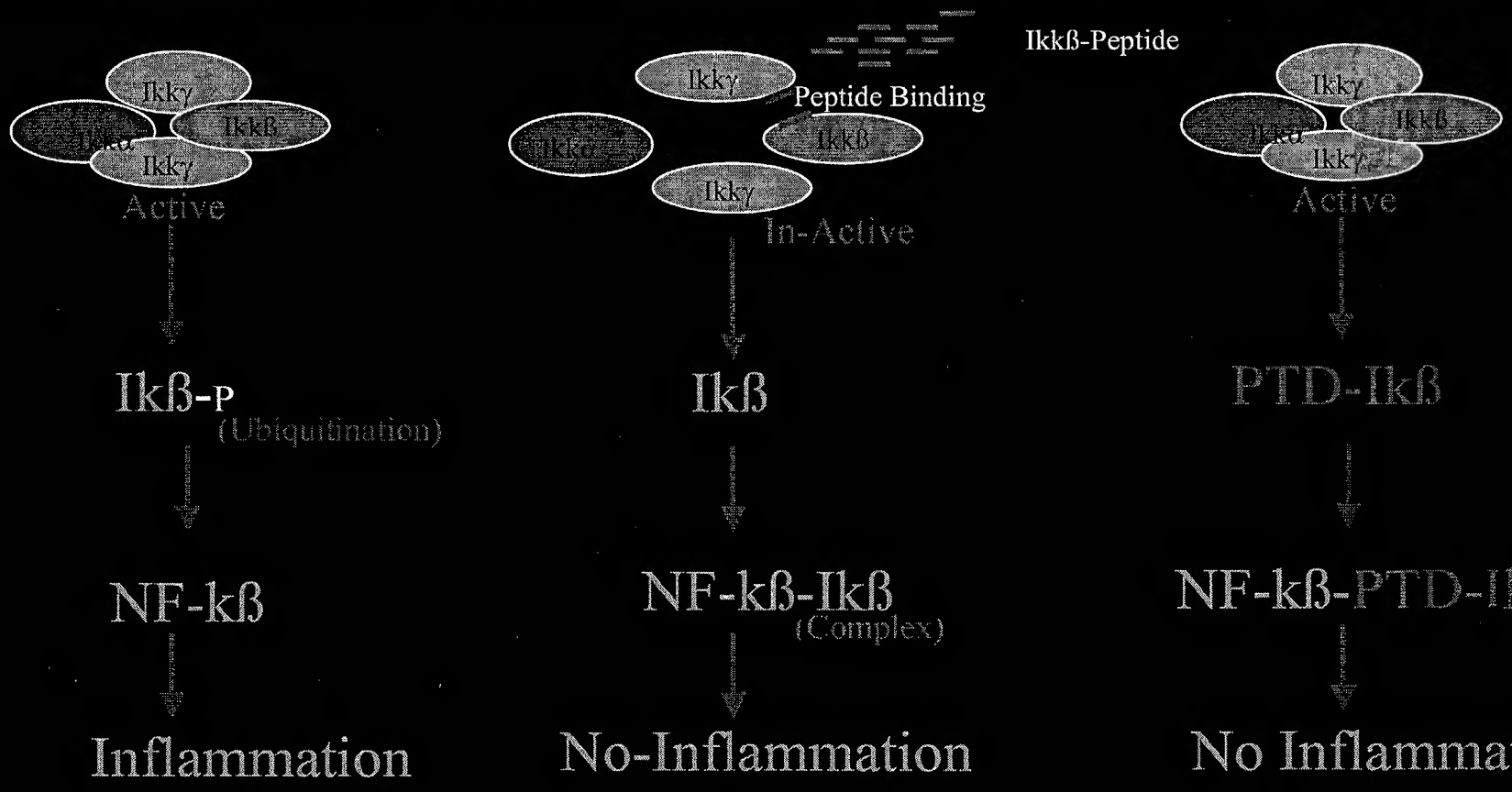
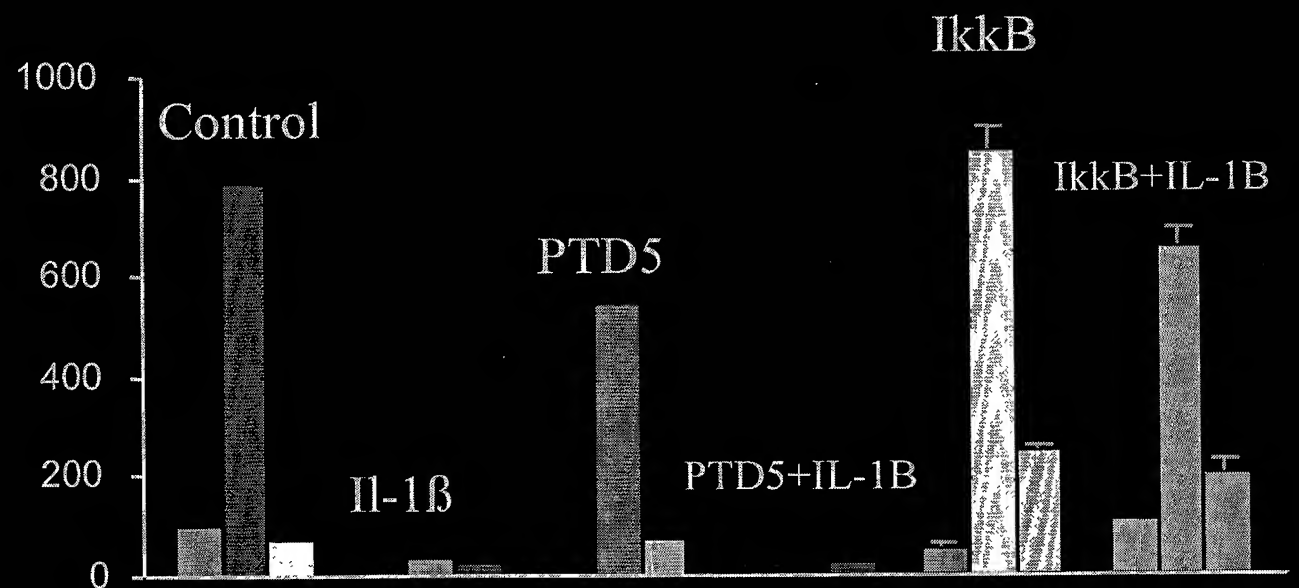


Fig. 42

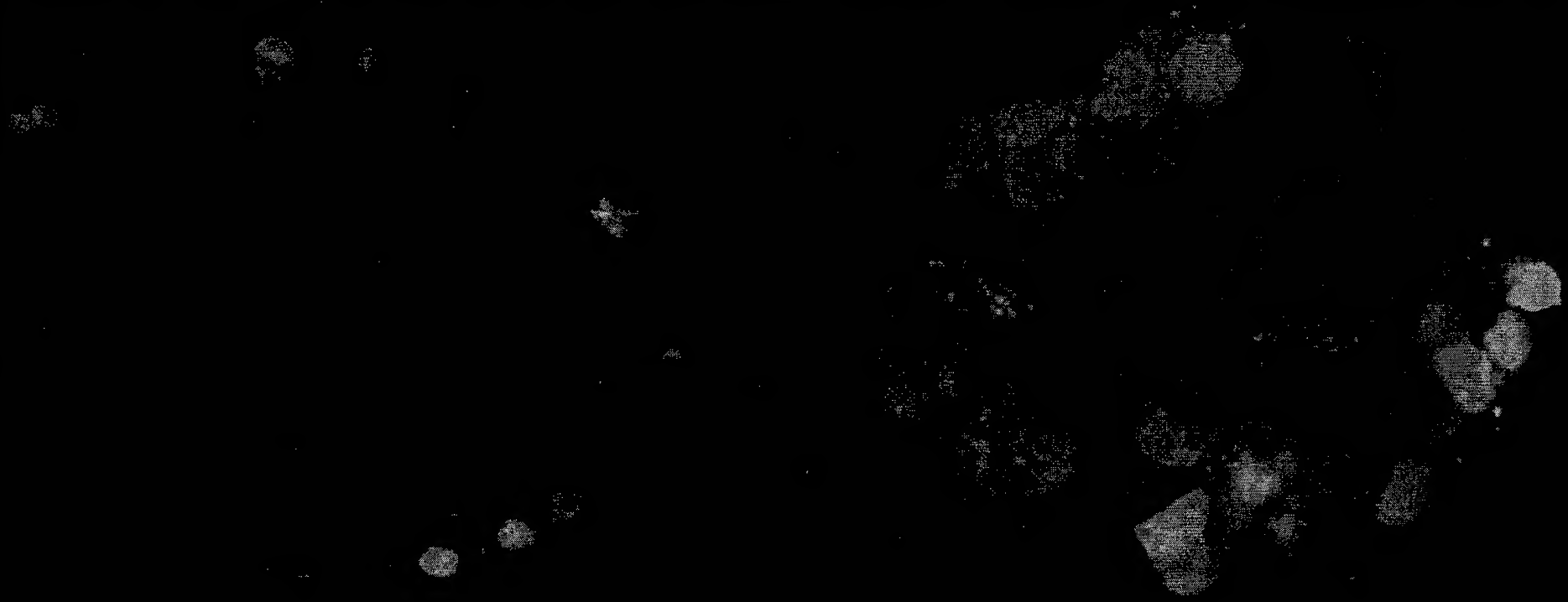
Insulin Response to Glucose after Mouse Islet Incubated with Peptides and IL-1ß



(Glucose 2.8, 20 and 2.8 mM)

Fig 43

Transduction of Peptide Ikkß During Mouse Islet-Isolation



TAT(PTD4)-FITC

PTD5-FITC

Gene Therapy Applications to Type I Diabetes

Project 9

Fig 44

Transduction of Peptide into ß-Cells During Mouse Islet-Isolation

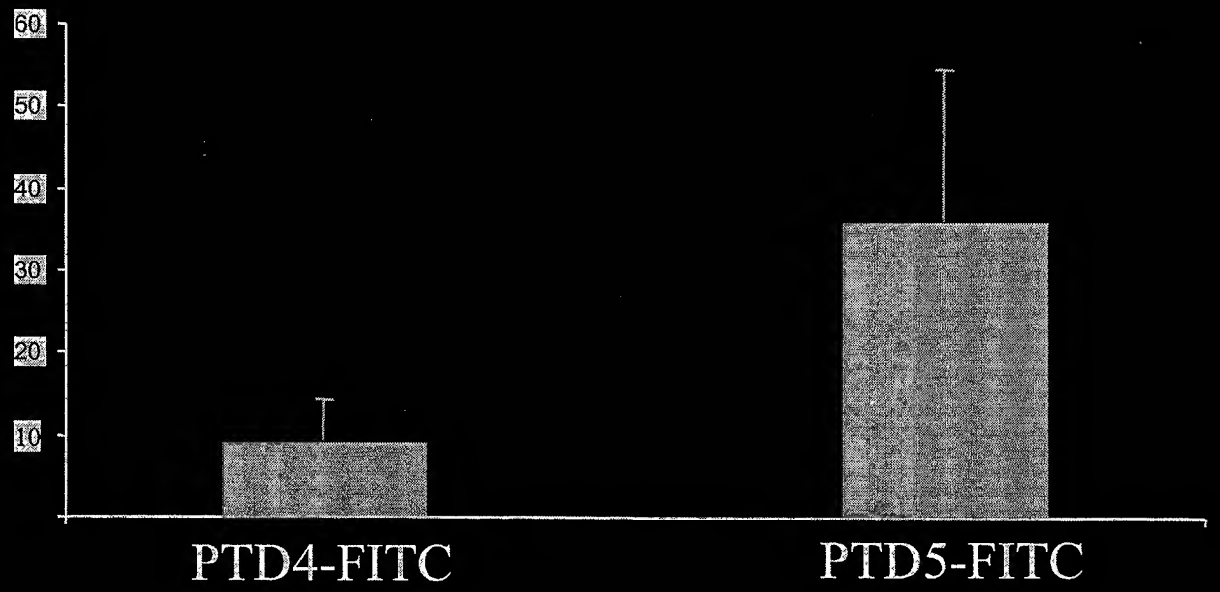
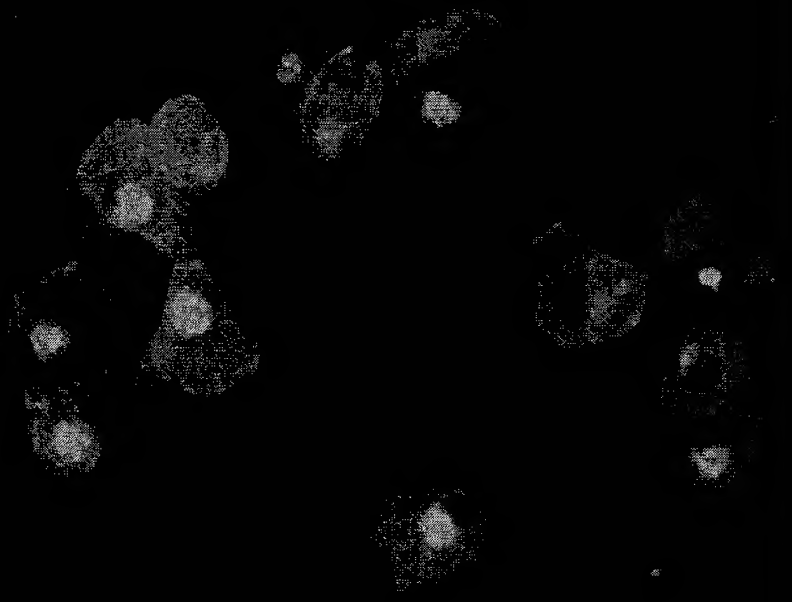


Fig 45

Transduction of Fusion Protein During Mouse Islet-Isolation



eGFP

PTD5-eGFP

Gene Therapy Applications to Type I Diabetes

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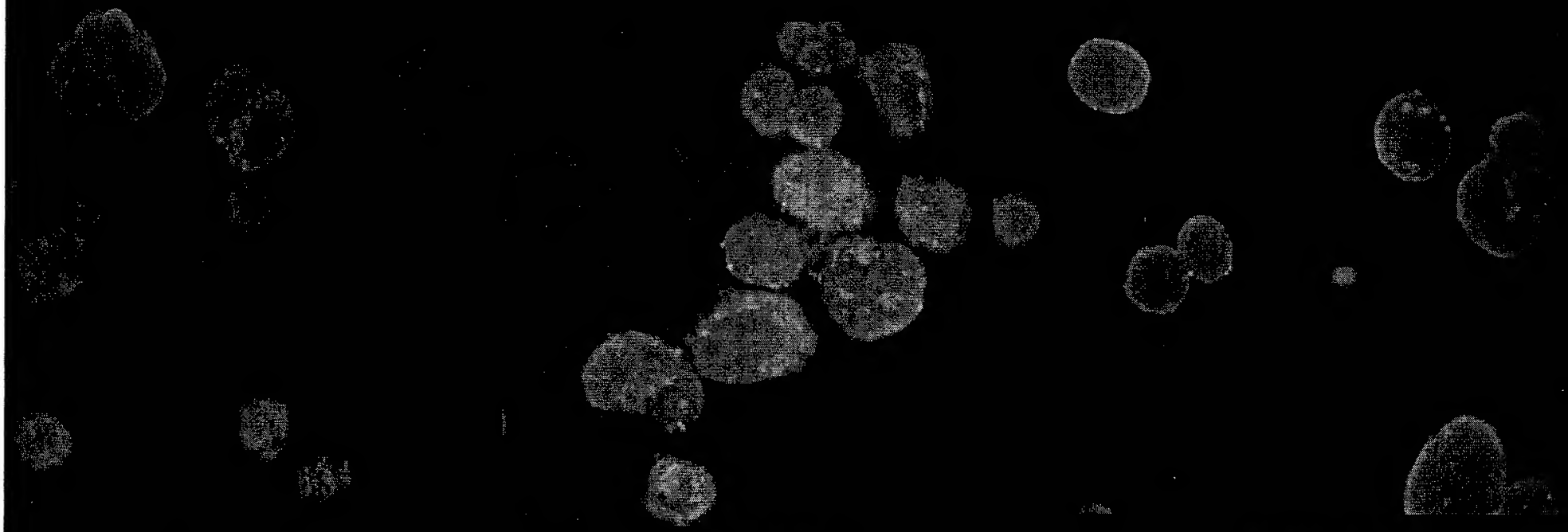
Fig 46

Viability of Mouse Islets Isolated with Peptides



Control PTD-5 PTD5-IkkB

Gene Therapy Applications to Type I Diabetes

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Fig. 47

Protection of Mouse Islets During Isolation Procedure by PTD-Ikkß Transfer

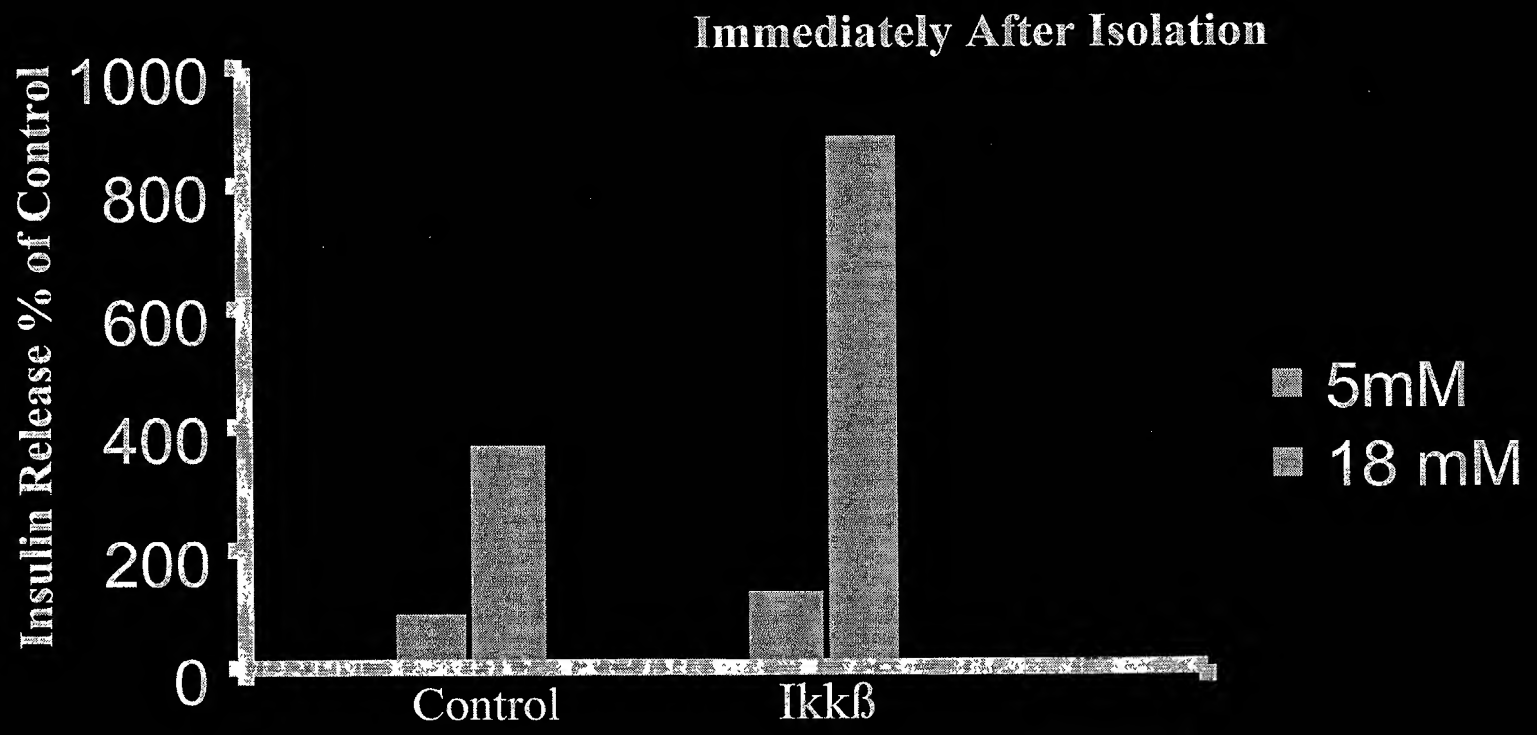
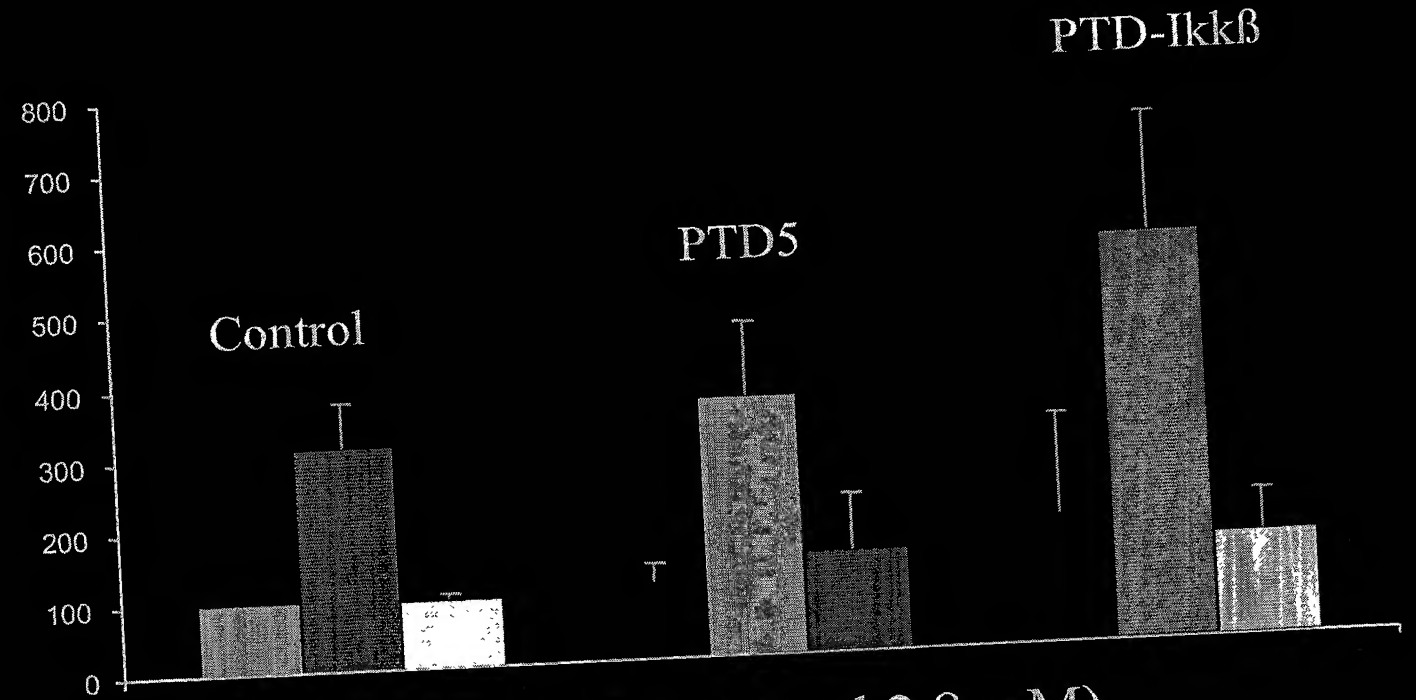


Fig. 48

Insulin Response to Glucose 12-16 hrs. after Mouse Islet Isolation with Peptides



(Glucose 2.8, 20 and 2.8 mM)

Fig 49

PTD-5-FITC Transduction to Human Islets

Gene Therapy Applications to
Type I Diabetes

Project 9

Fig 50

Effect of PTD-IKKß on Islet Cell Mass